Quality Management Plan

For the

New Hampshire
Department of Environmental Services

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Revision #6

Quality Management Plan

Prepared by:

New Hampshire Department of Environment Services
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095
http://www.des.nh.gov/qa

DES Senior Leadership Team

Michael P. Nolin, Commissioner
Michael J. Walls, Assistant Commissioner
Robert R. Scott, Air Resources Division Director
Anthony P. Giunta, Waste Management Division Director
Harry T. Stewart, Water Division Director
Susan Carlson, Chief Operating Officer
Timothy Drew, Public Info. & Permitting Unit Administrator

DES Quality Management Plan

Approval Signatures

Approvals for DES

Michael P. Nolin, Commissioner
NH Department of Environmental Services

Signature Michael P. Nolin Date 07 06 06

Michael J. Walls, Assistant Commissioner
NH Department of Environmental Services

Signature Michael J. Walls Date 7/5/06

Vincent R. Perelli, Quality Assurance Manager
NH Department of Environmental Services

Signature Vincent R. Perelli Date 6/30/06

Robert P. Minicucci, Assistant Quality Assurance Manager
NH Department of Environmental Services

Signature Robert P. Minicucci II Date 6/30/06

Approvals for USEPA

Gerry Sotolongo, Regional Quality Assurance Manager
USEPA Region 1 - New England

Signature Gerry Sotolongo Date 9/14/06

Carl Deloi, New Hampshire State Director
USEPA Region 1 - New England

Signature Carl Deloi for Date 9/8/06

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LIST OF DEFINITIONS

Document

Any written, recorded information that is subject to change over time. Procedures, plans, policies, and records are documents. Documents may be controlled. See Records.

Environmental Conditions

The description of a physical medium (e.g., air, water, soil, sediment) or biological system expressed in terms of its physical, chemical, radiological, or biological characteristics.

Environmental Processes

Manufactured or natural processes that produce discharges to or that impact the ambient environment.

Environmental Data

Any measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology.

Environmental Data Operations

Work performed to obtain, use, or report information pertaining to environmental processes and conditions.

Environmental Programs

A term pertaining to any work or activities involving the environment, including: characterization of environmental processes and conditions; environmental monitoring; environmental research and development; the design, construction, and operation of environmental technologies; and laboratory operations on environmental samples.

National Environmental Laboratory Accreditation Conference (NELAC)

An organization to foster the generation of environmental laboratory data of known and documented quality through the adoption of national performance standards for environmental laboratories accredited under the National Environmental Laboratory Accreditation Program (NELAP) and other entities directly involved in the environmental field measurement and sampling process.

National & New Hampshire Environmental Laboratory Accreditation Programs (NELAP) & (NHELAP)

An environmental laboratory accreditation program that is administered by a recognized state accrediting authority which implements the NELAC standards and ensures that all laboratories are fully compliant with those standards. The state of NH accreditation program is called the New Hampshire Environmental Laboratory Accreditation Program (NHELAP).

Program

A functional unit of the DES conducting a defined set of activities and deliverables or otherwise a core set of related functions. This administrative function will often be found at the Bureau level, but this varies across DES. An example would be the Limnology Program within the Watershed Management Bureau of the Water Division.

Program Manager

The person responsible for conducting a specific DES program; this program management function is vested in people at different administrative levels within DES. The term project manager is used to describe staff that have direct knowledge and/or responsibility at the project or site-specific level.

Quality Assurance (QA)

An integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the client.

DES Quality Assurance Manager

The person assigned to manage (DES's) QA system.

Quality Assurance Program Plan (QAPP), Generic

A planning document, written to USEPA specifications, which describes quality assurance procedures for a program or a set of projects. Use in conjunction with a Sampling and Analysis Plan (SAP – see Definition).

Quality Assurance Project Plan (QAPP)

A planning document, written to USEPA specifications, which describes quality assurance procedures for a specific project.

DES Quality Assurance Team

A group of DES staff from various programs with interest and expertise in QA/QC matters which provides assistance to the Quality Assurance Manager and DES programs on QA/QC matters.

Quality Control (QC)

The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality.

Quality Management

That aspect of the overall management system of the organization which determines and implements the quality policy. Quality management includes strategic planning, allocation of resources, and other systematic activities (e.g., planning, implementation, and assessment) pertaining to the quality system.

Quality Management Plan (QMP)

A formal document or manual, usually prepared once for an organization, that describes the quality system in terms of the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, and assessing all activities conducted.

Records

A completed document that provides objective evidence of an item or process. Records may include photographs, drawings, magnetic tape, or other data recording media. See documents.

Sampling and Analysis Plan (SAP)/Site Specific Plan (SSP)

A planning document used in conjunction with a Generic Program QAPP, which describes the quality assurance procedures for a specific project/task that is not covered by the generic QAPP for the program.

Standard Operating Procedures (SOPs)

A written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps, and that is officially approved as the method of performing certain routine or repetitive tasks.

CHAPTER 1 PURPOSE

1.1 INTRODUCTION

The mission of the New Hampshire Department of Environmental Services (DES) is to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire. In carrying out its mission, DES relies upon many different types of data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences. The data DES uses must be credible, and the quality of that data must be appropriate for its uses.

To accomplish this, every DES staff member must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data. This is best accomplished by having a central documented plan, which is periodically reviewed and updated so that the overall data quality system continuously improves.

Each bureau and/or unit (hereinafter generally referred to as "program") within DES is responsible for assuring that data gathered by that program is of appropriate quality for its uses. Historically, DES programs have had success addressing their data quality needs. However, this was achieved largely through undocumented procedures, on-the-job training, and addressing system needs and deficiencies in an informal manner. While this approach may have served DES's past needs, the lack of documentation causes problems in assuring credibility for data underlying DES decisions and policies, and in institutionalizing a significant, but undocumented, knowledge base. To address these issues, this DES Quality Management Plan (QMP) documents the policies and procedures that ensure the appropriate quality of the environmental data used by the Department.

This QMP is intended to specifically document how the Quality Management System at DES is structured and implemented, and to provide a framework for continuous improvement. The QMP is a controlled document, the most up-to-date version of which is always accessible on the DES Intranet under the "Quality Assurance at DES" folder. It is the responsibility of all pertinent staff keep an up-to-date copy (or access to one) readily available.

The QMP contains nine primary chapters organized to parallel federal guidelines and national standards for quality assurance, as follows:

2. DES's Organization
3. Quality System Components
4. Personnel Qualification and Training
5. Procurement of Items and Services
6. Computer Hardware and Software
7. Documents and Records
8. Planning and Implementing Quality Processes
9. Assessment and Corrective Action
10. Continuous Improvement

The QMP:

- Identifies the mission of the DES;
- Describes in general terms how the DES is organized to accomplish its mission;
- Identifies its commitment to quality and the quality systems needed to ensure that it accomplishes its mission; and
- Outlines roles and responsibilities within the organization to ensure data quality.

All of DES's major environmental programs will be covered by this QMP. The QMP affirms DES's commitment to quality.

1.2 ENVIRONMENTAL DATA QUALITY POLICY - (Updated December 2004)

BACKGROUND: The mission of the New Hampshire Department of Environmental Services (DES) is to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire. In carrying out its mission, DES relies upon many types of data that enable it to better evaluate existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences. Data is used for setting priorities and strategic direction, targeting inspections, measuring compliance, identifying violations, measuring progress and trends, measuring ecological health, and many other purposes. This data is critical because it can affect DES's direction and emphasis, determine whether an enforcement case will be successful, dictate which option will be followed to address a problem, document a problem, or demonstrate progress to the general public and the General Court.

KEY PURPOSE: The data DES uses must be credible, of known quality, and the quality and quantity of that data must be appropriate for its intended uses. To accomplish this, everyone at DES must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data.

POLICY STATEMENT: The Department of Environmental Services will ensure, within its authority, that all of its programs deliver data of known quality to allow all parties to make appropriate decisions about the environment in New Hampshire.

IMPLEMENTATION STRATEGY: DES's data quality management efforts will follow written plans and guidance, which each program must generate. Copies of this policy will be provided to all staff via e-mail and the DES Intranet. The DES *Quality Management Plan* (QMP) provides guidance for all DES programs. Following the QMP, all programs will prepare written standard procedures for sampling, testing, gathering information on field conditions, checking and validating this information, and reviewing their data quality systems. All programs will ensure that the purpose of every data gathering effort is understood by their personnel. DES has assigned a Quality Assurance Manager, Assistant Quality Assurance Manager, and a Quality Assurance Team, comprised of representatives of programs throughout DES, to lead these efforts. All DES programs will have written data quality guidance, in accordance with the DES QMP. All DES programs will review their data quality systems annually, and will report the results of that review, including recommendations and actions for improvements, to the Quality Assurance Manager.

NOTE: This policy is subject to revision. It is the responsibility of all employees to ensure that they are familiar with the most recent policy.

Date Established: **June 2001** **Date Revised:** **December 2004**

DES Environmental Data Quality Policy

(December 2004)

Approval Signatures

Michael P. Nolin, Commissioner
N.H. Department of Environmental Services

Signature _____ Date 12 03 04

Michael J. Walls, Assistant Commissioner
N.H. Department of Environmental Services

Signature _____ Date 12/3/04

Vincent R. Perelli, Chief of Planning and Policy / Quality Assurance Manager
N.H. Department of Environmental Services

Signature _____ Date 12/2/04

Robert P. Minicucci, Innovative Technology Coordinator / Assistant Quality Assurance Manager
N.H. Department of Environmental Services

Signature _____ Date 12/2/04

1.3 DES'S MISSION

DES was established by statute, effective January 2, 1987, combining several separate agencies and boards into a single department. The enabling legislation for DES, New Hampshire Revised Statutes Annotated (RSA) Chapter 21-O, sets forth the following broad areas of responsibility for the then new agency:

- Water pollution control;
- Water supply protection;
- Regulation of waste disposal;
- Maintenance of state-owned dams;
- Inspection of dams;
- Flood control; and
- Air pollution control.

As set forth in DES's *2003-2007 Strategic Plan*, DES's mission is to "*help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire*." Goals established under the *Strategic Plan* are:

1. Clean Air

The air we breathe in New Hampshire is safe and healthy for all citizens, including those most vulnerable, and our ecosystems are free from the adverse impacts of air pollution.

2. Clean Water

All of New Hampshire's lakes and ponds, rivers and streams, coastal waters, groundwater, and wetlands are clean and support healthy ecosystems, provide habitats for a diversity of plant and animal life, and support appropriate uses.

3. Safe Drinking Water

All drinking water in New Hampshire will always be safe, available and conservatively used.

4. Proper Waste Management & Effective Site Remediation

Promote responsible waste management and ensure wastes/regulated materials are properly handled and disposed. Conduct prompt remediation to restore contaminated sites to productive use while protecting the environment and public health.

5. Protection of Natural Habitat

The sustainable development of New Hampshire's lands and natural resources is promoted throughout the state while protecting the diverse wildlife habitat, and unique features that make New Hampshire an attractive place to live, work, and visit.

6. Dam Safety and Water Management

The state's surface and groundwater resources are managed and regulated for the protection, enhancement and restoration of environmental quality and public safety to support and balance social and ecological water needs.

7. Effective Management and Leadership

DES sets and achieves the highest standards for effective internal management, fiscal responsibility and leadership on environmental issues.

8. Pollution Prevention and Sustainability

Encourage best efforts to prevent pollution before turning to recycling, treatment and/or disposal of the materials causing pollution. Eliminate or reduce the toxicity and absolute volumes of waste materials. Eliminate accidental pollutant releases to the environment. Conserve materials, energy, and water in order to move toward a sustainable society.

9. Public Education, Outreach and Partnerships

DES provides effective public education, outreach, and partnership activities.

10. Compliance Assurance

In order to foster full compliance with the laws it administers, DES provides education and outreach to the public, provides assistance to the regulated community, monitors compliance on an on-going basis, and maintains a fair and effective enforcement process.

11. Information Management

Information is collected, managed, analyzed and disseminated effectively and efficiently to support well informed, timely and cost-effective environmental decision-making.

CHAPTER 2 DES'S ORGANIZATION

2.1 HOW DES IS ORGANIZED

The organizational chart included in Appendix A sets forth the current structure of the Department. DES consists of the Commissioner's Office, the Air Resources Division, the Water Division, and the Waste Management Division. While there are some satellite offices around the state for certain functions (see Appendix B), all DES functions are managed from the offices in Concord. DES is a relatively small agency with approximately 500 staff. Because of this, and because most personnel are generally housed in the same building, it is DES practice for programs to consult and cooperate on all pertinent issues at all administrative levels. This chapter must not be read as describing a rigid organization comprised of many separate units. Cooperation between the various programs to address new issues, or issues that may affect more than one statutory program, is a hallmark of DES.

The responsibilities of the DES Senior Leadership Team are outlined in this QMP. In general, the Senior Leadership Team reviews the annual Quality Assurance System Status Report presented by the QA Manager or the Assistant QA Manager, and authorizes necessary changes to support the DES QA System.

DES's programs interact with many federal, state, and local government agencies, non-profit and non-governmental environmental and similar organizations, environmental groups, universities, volunteer groups, and many other organizations in order to maximize efforts to protect and enhance public health and the environment in the state. They are an integral part of the Department's environmental data gathering and analysis activities. A number of programs within the DES Watershed Management Bureau, in particular, the Volunteer River Assessment Program and the Volunteer Lake Assessment Program, rely heavily upon volunteer-generated information. Other programs, like the Technical Services Bureau's Air Monitoring section, utilize contracted laboratories to provide special analytical services. It is not uncommon for many other DES programs in the Air Resources, Water, and Waste Management Divisions to contract with a wide variety of individuals and organizations (as listed above) to assist with data gathering and analyses.

This QMP includes guidance on assuring that any such data generated by these outside parties through contracted, delegated, or volunteer activities meet DES's data quality needs (See Section 4.2 - "Volunteer Qualification and Proficiency" and Section 5.2 – "Procurement of Services"). Included among these groups are the United States Environmental Protection Agency, other New Hampshire state agencies (e.g., the Departments of Health and Human Services, Fish and Game, Resources and Economic Development, Transportation, etc), local Boards of Health, Regional Planning and Conservation Commissions, Environmental and other non-governmental organizations, private organizations, the University of New Hampshire and other educational institutions.

2.1.1 COMMISSIONER

The Governor, with the approval of the New Hampshire Executive Council, appoints the Commissioner of DES for four-year terms. The Commissioner reports to the Governor. The Commissioner chairs the Senior Leadership Team, which is comprised of the Assistant Commissioner and the three Division Directors, each of whom report directly to the Commissioner.

The functions of these positions with respect to the QMP are described briefly below.

2.1.2 ASSISTANT COMMISSIONER

The Assistant Commissioner is an appointed position with a four-year term. The Assistant Commissioner oversees implementation of the Quality Management System. In this function, the Assistant Commissioner will resolve any quality assurance-related disputes that cannot be resolved by the Quality Assurance Manager with the Quality Assurance Team's assistance.

2.1.2.1 COMMISSIONER'S OFFICE UNITS

The following Units report to the Assistant Commissioner. Descriptions are provided for those Units with specific ties to the Quality Management Plan.

- Administrative Services Unit - This unit is responsible for all accounting functions, federal grants, purchasing, budgets, property records, payroll, and financial reporting.

- N.H. Geological Survey - The State Geologist advises DES and all other branches of state and local government concerning geology-related issues. The state geologist maintains liaison with federal and other state geologic agencies and with the University of New Hampshire.

- Human Resources (HR) Unit - HR is responsible for functions such as organizational and employee development, employment, compensation and benefits, employee relations for the DES, and various training and record keeping (including quality-related training).

- Office of Information Technology (OIT) - (Previously the Information Resources Management Unit (IRMU) in the Commissioner's Office, now a separate agency). **Note:** In 2003, a new, centralized Office of Information Technology (OIT) was formed, which essentially consolidated ALL formally dedicated agency information management/technology staff and resources into a single, separate state agency. For DES, this resulted in the organizational, and in several instances, physical transfer of some twenty-five DES staff who previously working in the DES Information Resources Management Unit under the Office of the Commissioner. While the reorganization has been completed, and is widespread, the general quality assurance-related information technology functions and processes described in the pertinent QMP chapters remain largely the same as before the large re-organization. OIT is responsible for all computer hardware and software at DES, including purchases, installation, and maintenance. DES's Geographic Information Systems (GIS) efforts are also coordinated by OIT.

- Laboratory Services Unit - The DES Laboratory is a fully-accredited (NHELAP) laboratory that conducts testing of drinking water, surface water and groundwater from both background and contaminated waste materials and soils. Testing for microbiological, inorganic, organic, and radiochemical parameters is conducted in-house.

- Legal Unit - The Legal Unit is responsible for conducting administrative hearings on proposed administrative fines and license revocation/suspensions and for providing other legal support to DES. The Legal Unit also oversees all DES administrative rule-making and administrative enforcement. The Legal Unit does not serve as General Counsel to DES; that role is filled by the N.H. Department of Justice, Attorney General's Office (NHDOJ). DES refers appropriate enforcement cases for judicial action (civil or criminal) to the NHDOJ and requests NHDOJ representation in some administrative matters.

- Planning, Prevention & Assistance Unit (Previously the Planning Unit) - As of January 2006, there was a newly-organized *Planning, Prevention & Assistance Unit* within the Commissioner's Office. This unit brings together programs and positions that provide technical and compliance assistance and environmental planning. The goal of consolidating these programs was to increase collaboration among the programs and staff and improve the effectiveness of the department's multi-media efforts. The new unit is composed entirely of existing positions from all three divisions and the Office of the Commissioner. The Pollution Prevention and Household Hazardous Waste Programs from the Waste Management Division (previously under the Waste Prevention and Technical Information Bureau) are under the supervision of the Department's Pollution Prevention Coordinator. The Small Business Ombudsman and Supervisor of the Small Business Technical Assistance Program (previously in the Air Resources Division) continues in that role and will also oversee the Occupational Safety & Health Administration (OSHA) Consultation Program that came to the DES Commissioner's Office in July 2004. The OSHA Consultation Service provides free, on-site health and safety services to eligible employers, mostly small businesses. The Chief of Planning and Policy/DES QA Manager heads up the Planning & Innovation Section, where the department's "Smart Growth" Coordinator from the Water Division's Watershed Management Bureau and Special Projects Manager/DES Assistant QA Manager from the Waste Management Division join him. Over the next three years, the Special Projects Manager will be heading up the development of New Hampshire's first Environmental Leadership Program, one aspect of which will mirror USEPA's National Environmental Performance Track program.

- Public Information and Permitting Unit (PIP) - PIP is responsible for the coordination of DES communications with the public and media outlets, and for coordination of publications development and dissemination by the various agency programs. PIP also provides technical permit coordination services, in cooperation with other federal, state, and local agencies, to familiarize and assist new companies, organizations, government agencies, and individuals with interpretation of regulatory requirements (including their applicability) and the availability of integrated permitting assistance from the agency, including the new *Guidebook for Environmental Permits in NH*.

2.1.3 DIRECTOR, AIR RESOURCES DIVISION

The Director of the Air Resources Division (ARD) is an appointed position. The Director is responsible for all Department functions related to air pollution and air quality. In order to evaluate New Hampshire's air quality, ARD operates ambient air quality monitoring stations throughout the state. Air quality monitoring data is collected on a continuous basis and evaluated based on the National Ambient Air Quality Standards established by the US Environmental Protection Agency.

Depending on the results of the air quality monitoring data, various programs have been implemented to achieve and/or maintain the standards and comply with federal requirements. Some of these ongoing programs include: stationary source permitting (or licensing), stationary source inspections, complaint investigations, compliance stack testing, local and long-range air dispersion modeling analyses, and various education and outreach initiatives.

ARD also maintains an extensive air emissions database. This database includes emissions from New Hampshire stationary sources, mobile sources and area sources. Stationary sources of air pollution are required to submit annually their actual air pollution emissions. Mobile sources emissions estimates are calculated using vehicle miles traveled data and USEPA approved emission factors. Area sources emissions are estimated using fuel usage data, population data, etc. This data is stored in state/federal databases where it can be used for many different purposes such as: compliance determinations, evaluating the effectiveness of state and national policies, predicting state and regional air quality concerns, and evaluating overall air quality emissions trends.

In addition to air pollution from New Hampshire sources, ARD is also concerned with the transport of air pollution from upwind states. ARD is actively involved in regional and national policy decisions to seek emission reductions from sources in upwind areas. In particular, New Hampshire's long-range air quality modeling data is used extensively to support these national policy positions.

ARD is divided into several functional units as follows:

- Atmospheric Science and Analysis Unit - This unit is responsible for the preparation of technical support and data analysis for comprehensive revisions to New Hampshire's State Implementation Plan. This Unit performs complex regional atmospheric analyses, including photochemical modeling and assessment of regional transport of air pollution. It also participates in regional/national air quality planning, and provides emissions inventory preparation assistance, criteria pollutant re-designation, and implementation-phase policy planning and technical support for new National Ambient Air Quality Standards.

- Permitting and Environmental Health Bureau (formerly the Stationary Source Management Bureau (SSMB) – The newly re-organized Bureau is responsible for permitting, planning, modeling, and the overall management of stationary sources of air pollution. The Permitting section ensures that new and existing sources of air pollution comply with a wide range of state and federal air pollution regulations. The Air Toxics Section of this Bureau oversees the state Air Toxics Program and the federal Hazardous Air Pollutants Program. In 2006, several new environmental health-related programs were added to the Bureau. **Note:** Several new programs came to DES in July 2004, but only recently found their final organizational "homes" in this bureau. The programs, housed in this bureau under Environmental Health Programs include: Health Risk Assessment, Environmental Toxicology, Radon, and Indoor Air Quality. The Health Risk Assessment Program performs technical risk assessments to evaluate the health risk associated with exposure to toxic chemicals released into the environment. The program issues statewide health advisories on topics such as mercury in fish and provides health information summaries on various chemicals. The Environmental Toxicology Program evaluates toxicological information for use in risk assessment and regulatory decision making. The Radon Program is responsible for gathering information on indoor radon occurrence within the state and for disseminating information about where radon occurs throughout New Hampshire, the health effects associated with exposure to radon, and the various means of reducing radon concentrations in both indoor air and water supplies. The Indoor Air Quality

Program is responsible for disseminating information on indoor air quality issues such as mold in the home and second-hand smoke.

- Technical Services Bureau – This bureau serves as technical support to the Division and is mainly responsible for operating and maintaining the State's air quality monitoring sites and operation of the State's Air Quality Information Line and website. ARD's Energy / Climate Change Programs and Mobile Source Programs are also housed in this bureau. In the air quality planning role, the Technical Services Bureau oversees rulemaking for the Division. The Technical Services Bureau is divided into four units; the Planning and Mobile Sources Unit, the Ambient Air Monitoring Unit, the Energy/Climate Change Unit, and the Public Education and Outreach Unit. The Energy/Climate Change Unit administers Economic Incentive programs for businesses, such as cap and trade programs and a voluntary greenhouse gas registry The Public Education and Outreach Unit is responsible for various education and outreach initiative and planning related activities. Activities include coordinating ARD's Performance Partnership Agreement, developing ARD fact sheets and other educational materials, developing outreach initiatives, and developing/coordinating educational/outreach activities including training workshops, visits to schools, speaking engagements, etc

- Compliance Bureau – The Compliance Bureau is responsible for administering the State's compliance assistance and enforcement activities relative to state and federal air pollution control laws and regulations. The Compliance Bureau is responsible for compliance determinations, facility inspections, complaint investigations, compliance stack testing, Relative Accuracy Testing Audits (RATAs), emissions inventory, compliance assistance, and enforcement. The Compliance Bureau is divided into four sections: Compliance Testing; Compliance Assessment; Emissions Inventory; and Enforcement. An important function of this bureau is maintaining an accurate and extensive air pollution emissions inventory of New Hampshire sources. This data has many useful purposes including determining compliance with state and federal regulations, establishing state and national emissions trends and helping to evaluate the effectiveness of the State's air quality programs.

- Small Business Technical Assistance Program (SBTAP) – **Note:** In January 2006, the SBTAP Program was moved to the Office of the Commissioner's new Planning, Prevention & Assistance Unit.

2.1.4 DIRECTOR, WASTE MANAGEMENT DIVISION

The Director of the Waste Management Division (WMD) is an appointed position. The Director is responsible for all DES functions related to solid and hazardous waste management, contaminated site investigation, hazardous material storage, and hazmat and petroleum spill response.

Field testing to address complaints or to confirm results reported by others is conducted as necessary. In a few cases, WMD personnel conduct on-going soil and groundwater sampling and testing programs at contaminated sites. In the majority of cases, WMD personnel review sampling and testing results reported by others such as outside contractors and consultants.

Note: The Waste Management Division is still in a state of flux due to an on-going reorganization effort. The QA Manager and Assistant QA Manager will continue to monitor the effects of the effort on program-level QA systems, as well as effects on the overarching DES QA System.

WMD is divided into two major functional units or branches – "Waste Management Programs" and "Site Remediation Programs" -- with Bureaus:

- **Waste Management Programs**. These include:

  - The Solid Waste Management Bureau is comprised of three sections: Compliance, Financial Oversight, Permitting & Design Review, and an individual responsible for "Technical & Scientific Initiatives." The Compliance Section deals with general compliance and landfill closure, and remediation and monitoring of asbestos contaminated properties. The Financial Oversight Section oversees landfill and incinerator closure grants to ensure that timely facility closures are not delayed by lack of funding. Also, the financial assurance program was established to monitor the adequacy of funds being available to close solid waste facilities. Lastly, the Permitting & Design Review Section reviews permit applications and design proposals and provide construction oversight at solid waste facilities.

  - The Hazardous Waste Compliance Bureau (Formerly a Section) (HWCB) is responsible for administering the State's hazardous waste management program. The HWCB inspects business entities and others for compliance with hazardous waste identification, storage, permitting, transportation, record-keeping and reporting. Other important functions of the HWCB include managing two Hazardous Waste Compliance Certification programs for full quantity and small quantity generators, and sustaining authorization of the State hazardous waste program in lieu of the federal government's program, drafting rules, providing compliance assistance and issuing various hazardous waste permits. The HWCB no longer provides grants for collection of used oil, as this function was moved to the Oil Remediation & Compliance Bureau in the Site Remediation Programs branch.

  - The Planning Bureau (formerly called the Waste Prevention and Technical Information Bureau) no longer exists in the Waste Management Division. Most of the programs in this section were reorganized into the Office of the Commissioner in new "Planning, Prevention & Assistance" unit, with the exception of "Solid Waste Technical Assistance Section" and the "Reporting & Information Management Section" which stayed behind.

  - Solid Waste Technical Assistance Section provides solid waste information, technical assistance, and planning support to solid waste districts, municipalities, the state legislature, other state agencies, and the public, and serves as a clearinghouse for information on markets for recyclables, recycling equipment, and municipal contacts. Specific services include: site visits, solid waste operator training, recycling & composting assistance, wood ash program, electronics recycling, and transfer station design.

  - The Reporting & Information Management Section is responsible for the implementation of all information management functions relative to the Resource Conservation and Recovery Act (RCRA) Subtitle C program.

  - Note: The Special Investigations Section (SIS) has been renamed and is no longer part of the Waste Management Programs branch of the Waste Management Division. See the Site Remediation Programs description below.

- **Site Remediation Programs**. This includes:

    - The Oil Remediation and Compliance Bureau administers petroleum-contaminated site investigation and clean-up; design review, registration and compliance inspection of above-ground petroleum storage tanks and all underground storage tanks (regardless of material stored); and administration of state reimbursement funds for releases of petroleum from regulated tanks. This Bureau is comprised of five sections, as follows: Fund Management, Petroleum Remediation, Oil Compliance, Spill Response & Complaint Investigation, and Library. The Used Oil Collection Grant Program (previously in the HWCB of the Waste Management Programs branch) is now in the Oil Remediation & Compliance Bureau. The Special Investigations Program, formerly called the Special Investigations Section in the Waste Management Programs branch, is now housed in the Spill Response & Complaint Investigation Bureau. This program maintains an emergency response capability for hazardous materials incidents, conducts "non-notifier" inspections at facilities generating hazardous waste who have failed to notify the State of that activity, register and monitor the compliance of all hazardous waste transporters operating vehicles in New Hampshire, and conduct investigations for solid and hazardous waste complaints.

    - The Hazardous Waste Remediation Bureau is made up of three sections; State Sites; Federal Sites; and Grants & Contracts Management. State Sites manages all sites where a hazardous substance or waste has been released or has the potential to be released. The program excludes all sites managed under: 1) a Federal program (Superfund or Department of Defense); and 2) petroleum product releases (although many contaminated sites have both hazardous waste and petroleum releases). The State Site program includes other programs, such as, Brownfields, Pre-Remedial (CERCLIS), RCRA Corrective Action, and Time Critical Removals. The Federal Sites Section focuses on contaminated sites managed through the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), or Superfund, and Department of Defense Programs. The Grants & Contracts Management section is responsible for administrative and financial reporting associated with programs in the Hazardous Waste Remediation Bureau.

2.1.5 DIRECTOR, WATER DIVISION

The Director of the Water Division (WD) is an appointed position. The Director is responsible for all Department functions related to water pollution, water quality, drinking water supplies, wetlands protection, water resources and dam safety. WD personnel review extensive data submitted to DES from a variety of sources, including operators of public water supplies, holders of National Pollutant Discharge Elimination System (NPDES) permits, individuals associated with the Volunteer Lake Assessment and Volunteer River Assessment Programs, the Shellfish Program, Beach Program, and many others. WD may take enforcement actions based on these results, as necessary. Field testing to address complaints or to confirm results reported by others is conducted as necessary.

WD is divided into six functional units:

- Land Resource Management Programs. These include:

    - Water Supply Engineering Bureau for all permitting, assistance and compliance functions related to public water supplies and environmental laboratory accreditation;

- The Wetlands Bureau for permitting and compliance functions related to all work in New Hampshire's wetlands;

- The Subsurface Systems Bureau for permitting of subdivisions and septic systems. This bureau also administers the licensing program for septic system designers and installers;

- The Shoreland Protection Program which oversees construction along shorelines to ensure water quality;

- The Water Quality Engineering Section which issues permits for erosion control at construction projects and enforces these permits.

- The Wastewater Engineering Bureau which provides design review and approval for sewers and treatment plants, manages the Revolving Loan Fund, provides operational assistance to municipalities, provides oversight of municipal industrial pre-treatment programs, enforces NPDES permits, and investigates un-permitted discharges into surface waters.

- The Watershed Management Bureau. This Bureau includes several programs, including:

  - Lakes and Rivers Management for planning and management functions related to the lakes and rivers of the state, including the Designated Rivers Program and the Instream Flow Program;

  - Watershed Assistance Section which includes nonpoint-source pollution and watershed protection initiatives, including education and outreach, and financial assistance for local initiatives and restoration projects through Section 319 Grants;

  - Water Quality Planning which includes on-going water quality testing of the state's rivers.

  - The Biology Section which monitors aquatic biota including exotic fresh-water weeds. This section also includes the Limnology Center, which conducts biological testing of aquatic biota to monitor ecologic health.

  - Volunteer River Assessment Program (VRAP) and Volunteer Lake Assessment Program (VLAP) which use volunteer monitors to collect water quality data from NH rivers and lakes and the Weed Watchers Program for Exotic Aquatic Species, both of which also rely upon volunteer-generated data.

  - Shellfish Program which ensures that the state's shellfish are safe for consumption by those who enjoy harvesting these public resources.

- The Dam Bureau which operates and maintains an extensive network of state-owned dams, reviews applications to construct dams, and inspects all dams for safety.

- The Water Resources Bureau which manages the water resources of the state, including extensive data gathering, such as snow-pack measurements and river and lake water levels.

- The Winnipesaukee River Basin Bureau which operates the Winnipesaukee River Basin Wastewater Treatment Plant, an 11.5 million-gallon-per-day (design flow) wastewater treatment plant covering most of the developed areas around Lake Winnipesaukee and Winnisquam and the Winnipesaukee River downstream of the Lakes.

CHAPTER 3 QUALITY SYSTEM COMPONENTS

3.1 OVERVIEW OF DES'S QUALITY SYSTEM

The DES quality system consists of the people, functions, tools and procedures used to improve and assure the quality of data generated for data users and decision-makers for the programs identified in Section 2.1. The DES quality system encompasses, and is applicable to, all aspects of its environmental data operations, as described in Sections 2.1.2 through 2.1.5.

This QMP is the main guidance document at DES to ensure that environmental programs (whether they are located within DES, or are working with DES programs under a variety of arrangements including on a contractual or volunteer basis), produce the type and quality of results needed and expected, in particular, that all environmental data collected, generated and used will be scientifically valid; of known precision and accuracy, completeness, representativeness, and comparability; and legally defensible. Because DES interacts with many federal, state, and local government agencies, environmental groups, universities, volunteer groups, and many other organizations in order to maximize efforts to protect and enhance public health and the environment in the state, this QMP also includes guidance on assuring that data generated by these outside parties meet DES's data needs.

Implementation of the DES QMP is the responsibility of staff throughout the Department, with the guidance and support of the DES Senior Leadership Team, the QA Manager, the Assistant QA Manager, and the QA Team, as well as program managers. Based upon the provisions contained in this QMP, staff are fully informed and trained as to how their activities affect data quality issues and what they must do to help produce quality data. The procurement of items and services associated with environmental programs is carried out in accordance with this QMP. Quality-related planning and implementation tools, such as Data Quality Objectives (DQOs), Quality Assurance Project Plans (QAPPs), Standard Operating Procedures (SOPs), and general document and records control are applied as described in this QMP.

Additionally, the "DES Quality Assurance System Implementation Guidance for Program Managers" (Implementation Guide) provides information tailored specifically to help DES's program managers. The Implementation Guide, the DES QMP, and other related information are posted on DES's Intranet site.

By January 31 of each year, the QA Manager and Assistant QA Manager, with the assistance of the QA Team, will prepare a Quality Assurance System Status Report covering the previous year. Detailed information on the extent of the QMP review (including a phased approach during the early implementation stages of DES quality management system) and the contents of the Quality Assurance System Status Report is presented in Chapters 9 and 10 of this document. The DES QA Manager, or Assistant QA Manager in the absence of the QA Manager, will provide a briefing to the DES Senior Leadership Team and identify any quality areas requiring improvement. The Commissioner and Assistant Commissioner have final review and approval authority for the report. The report will be maintained on file with the QA Manager and will be available to USEPA upon request.

The QMP will be reviewed annually to ensure that all information contained within it is relevant and up-to-date. Any necessary QMP revisions will be made, and the document will be submitted to

USEPA, along with the annual Quality Assurance System Status Report. Five years from the date of approval of this QMP, the QA Manager, Assistant QA Manager, and QA Team will undertake a complete review of the document and submit a revised QMP to USEPA for approval.

Each environmental program at DES will have access to the most current, approved version of the QMP. The approved QMP is posted on the DES Intranet under the "Quality Assurance at DES" folder and on the DES Website (at www.des.nh.gov/qa) for ease of access by program managers and others. Program-specific quality documents will also be posted on the DES intranet for staff use. Implementation of the quality assurance system will be incorporated into the appropriate Performance Partnership Agreement and Comprehensive Action and Assessment Planning documents for each environmental program.

3.2 QUALITY ASSURANCE MANAGER AND ASSISTANT MANAGER

The Quality Assurance (QA) Manager serves as coordinator for all matters relating to Quality Assurance policies and procedures. The QA Manager co-chairs the QA Team along with the Assistant QA Manager, which, in consultation with the Assistant QA Manager and the Assistant Commissioner, administers DES's quality assurance and control processes. The QA Manager has the training necessary to carry out quality assurance oversight, activities, and reviews. Currently, the DES Chief of Planning and Policy serves as DES QA Manager, among other duties. This critical QA-related duty is currently documented in the supplemental job description which includes an accountability which reads, "Serve as DES Quality Assurance Manager responsible for the development, implementation, and maintenance of a functioning, department-wide Quality Assurance System." This is the third listed accountability in a total list of 7 core job responsibilities. While the QA Manager duty does not have a written, required time commitment associated with it, approximately 20% to 30% of the Chief of Planning and Policy's time is spent on QA-related duties. All QA-related tasks are accounted for in an on-line Time Allocation System using the QA task code "5755." Reports are available from the Time Allocation System to document an actual written record of time spent by the QA Manager on QA-related activities.

The QA Manager maintains independence and impartiality of the data quality review. This individual has direct access to the Senior Leadership Team in order to communicate: 1) findings from reviews and audits; 2) status of the QA System and QMP; 3) problems with QA operations; 4) clarification and/or guidance on QA issues; and 5) resolutions to QA issues that may be in conflict with other management guidelines. This individual has no data gathering or reviewing responsibilities that would lead to a possible conflict with the QA Manager role.

The Assistant QA Manager plays a critical role in co-administering the department's overarching QA System, along with the QA Manager and the QA Team. Currently, the Special Projects Manager in the Office of the Commissioner's Planning, Prevention & Assistance Unit serves as Assistant QA Manager, among other duties. As with the QA Manager, this important QA-related duty is currently documented in the supplemental job description which includes an accountability which reads, "Serves as DES Assistant Quality Assurance Manager responsible for the development, implementation, and maintenance of a department-wide Quality Assurance System." This is the second listed accountability in a total list of 6 core job responsibilities. While the Assistant QA Manager duty does not have a written, required time commitment associated with it, approximately 15% to 25% of the Special Project Manager's time is spent on QA-related duties. All QA-related tasks are accounted for in an on-line Time Allocation System using the QA task code "5755." Reports are available from the

Time Allocation System to document an actual written record of time spent by the Assistant QA Manager on QA-related activities.

The QA Manager and Assistant QA Manager are in regular communication with one another regarding how to best maintain and continuously improve DES's QA System within current resource constraints. A recent (January 2006) reorganization in the Office of the Commissioner resulted in the creation of a new unit called, "Planning, Prevention & Assistance." This new unit is described in greater detail in Section 2.1.2.1. Due to the reorganization, the Assistant QA Manager organizationally now works for the QA Manager, a situation which allows for more robust and frequent communications on QA-related and other matters.

In the absence of the QA Manager, the Assistant QA Manager serves as acting DES QA Manager. Such stand-in duties include chairing QA Team meetings, communicating with staff and management on QA-related matters, and reviewing/approving project or program-level QA Project Plans or Sampling and Analysis Plans/Site Specific Plans (See Section 8.1, Planning Overview). The Assistant QA Manager has ongoing essential duties such as: 1) Serving as a QA "sounding board" and co-implementer of the DES QA System; 2) Maintaining the QA Team meeting log book; 3) Creating and updating various QA-related guidance documents, standard operating procedures, and audit forms and checklists; 4) Updating training/presentation materials and delivering QA Awareness Training sessions; 5) Overseeing the department's QA System Program Self-Assessment Process, including updating guidance documents and forms, tracking program responses, reviewing submitted self-assessment forms, and providing response documents to programs managing environmental data; and 6) assisting the QA Manager in the drafting and reviewing the DES QA System Status Report, which is submitted to the DES Senior Leadership Team on an annual basis. The procedures followed by the Assistant QA Manager in conducting the Program Self-Assessment reviews are documented in an SOP titled, "DES Quality Assurance System Standard Operating Procedure For Review of DES QA System Program Self-Assessments." This SOP was approved by the QA Manager on May 26, 2005, and is located on the DES Intranet under the "Quality Assurance at DES" folder.

3.3 QUALITY ASSURANCE TEAM

The mission of the QA Team is to implement the DES's goal of assuring the quality of environmental information used for decision-making. To achieve this goal, the QA Team must:

- Increase quality awareness and quality consciousness and commitment throughout DES;
- Provide appropriate training to all relevant staff; and
- Assure that all procedures related to data quality are properly observed and documented.

The DES QA Manager, Assistant QA Manager, and the QA Team have the overall responsibility for assessing the procedures that are implemented throughout the Department to determine whether they are in compliance with the QMP. Representatives of the various programs will, as a part of the QA Team, provide assistance to the QA Manager and Assistant QA Manager on both technical matters and policy matters. Specifically, the QA Team assists the QA Manager and Assistant QA Manager to:

- Oversee the implementation of the QMP, and to ensure that program managers and staff understand and implement applicable quality assurance procedures;
- Provide timely information on the status of the Quality Management System to DES's Senior Leadership Team;

- Help keep the DES QA website current;
- Serve as the liaison between the DES and the QA staff at USEPA Region I on Quality Assurance/Quality Control (QA/QC) matters;
- Provide interpretations of DES QA/QC policies and ensure that data policies and procedures are consistent with the USEPA requirements and DES goals;
- Coordinate the reviews, assessments, and audits that are identified in the QMP;
- Provide technical assistance to support program staff with implementing the QMP;
- With program managers, develop guidance on QA/QC issues for use in DES; and
- Resolve any disputes that may arise regarding quality assurance issues within or between various DES units.

The QA Team is the quality assurance resource for DES as a whole. It is anticipated that Team membership will change as circumstances dictate. The QA Team is comprised of individuals who have been identified by the DES Senior Leadership Team as qualified and available to serve as representatives of various programs. These individuals have varied responsibilities depending on which programs they represent. The current members of the DES QA Team are listed in Appendix C.

3.4 QUALITY SYSTEM TOOLS

The following are the primary tools utilized in DES's Quality Management System:

- Overall, this Quality Management Plan;
- An Environmental Data Quality Policy (see Section 1.2);
- The Implementation Guide;
- A description of relevant DES programs and activities covered by the quality assurance requirements outlined in this QMP (see Sections 2.1.2 through 2.1.5);
- An organizational structure to assure accountability (see Chapter 2);
- Designated roles and responsibilities of those involved with quality assurance functions, in particular, the DES Quality Assurance Team (led by the DES Quality Assurance Manager), and DES Program Managers (see Chapter 2 and Sections 3.2 and 3.3);
- Communications processes (internal, external, confidential and non-confidential);
- Up-to-date QA resources and references on the DES Intranet under the "Quality Assurance at DES" folder and the DES Quality Assurance Website at www.des.nh.gov/qa;
- Requirements and specifications, such as state and federal statutes, DES rules, federal regulations, Performance Partnership Agreements, grant work plans, Performance Partnership Grants, and contracts;
- Quality assurance planning tools, including strategic and organizational plans, project and program-specific quality assurance project plans (QAPPs), and similar documents such as sampling and analysis plans (SAPs), site specific plans (SSPs), and data quality objectives (DQOs) (see Chapter 8);
- Quality assurance implementation tools, such as SOPs, training requirements, procurement procedures, and record keeping requirements;
- Annual quality assurance assessment and response tools, including quality system audits, Quality Assurance System Status Reports, corrective actions, data quality assessments, and performance evaluations (see Chapter 9); and
- Management assessments (see Chapter 10).

CHAPTER 4 PERSONNEL QUALIFICATION AND TRAINING

DES recognizes that the quality of data it collects and manages is dependent upon the qualifications and levels of proficiency of DES staff and citizen volunteers who handle the data. DES's adherence to set procedures that define and control staff hiring and training, and adherence to its training requirements for volunteers, assures that staff members and volunteers are sufficiently qualified and proficient.

4.1 GENERAL STAFF QUALIFICATIONS AND PROFICIENCY

Administration of activities pertaining to staff qualifications and proficiencies of state agency employees are dictated by the New Hampshire Code of Administrative Rules of the Division of Personnel, Chapters Per 100 through 1500, adopted April 21, 1998. These fall under the statutory authority of RSA 21- I:43, II. Supplementing these rules are three Technical Assistance Manuals describing procedures that are followed pertaining to certain aspects of personnel management. These are *Technical Assistance Manual Chapter I – Classification; Technical Assistance Manual Chapter II – Recruitment and Certification; and Technical Assistance Manual Chapter III – Examinations.* The Division of Personnel, located at 25 Capitol Street in Concord, NH, holds copies of all these documents. Per 301.1 further requires that the Division of Personnel have a *Personnel Classification Plan*, which consists of a complete set of published class specifications and the evaluation plan and point factors used to write class specifications. DES also holds a reference copy of the current rules of the Division of Personnel.

Personnel qualifications are set under New Hampshire Code of Administrative Rules Chapter Per 300, which addresses both general job classification descriptions and job-specific qualifications specified under supplemental job descriptions. The Division of Personnel establishes the class specifications. Supplemental job descriptions for the DES positions are produced by a collaborative effort between DES and the Division of Personnel, ensuring DES's input in establishing the personnel qualifications for each of its positions. DES maintains a file of all current classifications and associated supplemental job descriptions.

Together, these documents prescribe a tightly-controlled process of defining job responsibilities and establishing qualifications (*i.e.,* experience, education, etc.), certifying that candidates meet those qualifications (all job applications must be certified by DES Human Resources Staff as meeting the minimum qualifications), and screening candidates through the prescribed examination and interview processes.

Further, the personnel rules define procedures that address the manner and frequency of evaluations to ensure that personnel performance continues to meet the standard required of the position.

Personnel rules, however, are only part of the process through which DES ensures continued proficiency of its staff. DES provides in-house training and provides for staff participation in other training, such as local and regional workshops. Also, certain activities are subject to review by others to ensure that DES's interests are not compromised by procedural errors. For example, a wetland inspector's Letter of Deficiency will be reviewed by the enforcement supervisor to ensure the integrity of all lines of evidence and other aspects of the inspection process. Shortcomings are thus identified early and are brought to the attention of the inspectors so that they may be avoided in the future.

4.2 VOLUNTEER QUALIFICATIONS AND PROFICIENCY

Volunteers perform an integral role in collecting data for various programs at DES. In order to ensure that DES volunteers are qualified to perform their data collection efforts, all volunteers are required to attend an annual DES-led training session pertaining to their particular collection effort. The documentation of this training attendance serves as the qualifier for all DES volunteers involved in data collection efforts. Data collected by volunteers who did not attend an annual DES training session is not accepted by DES, unless a qualified DES volunteer closely supervised the untrained volunteers in the collection efforts. The proficiency of the volunteers should be assessed as part of the program's normal annual review.

Volunteers also play a critical role in USEPA-funded projects that require QAPPs. If volunteers collect data as part of a QAPP-required project, the qualification and proficiency requirements will be specified in the USEPA-approved QAPP. Program managers should refer to *The Volunteer Monitor's Guide To Quality Assurance Project Plans,* USEPA 841-B-96-003 September 1996, or later edition.

4.3 TRAINING PROGRAMS - GENERAL

Program managers are responsible for evaluating positions, determining the need for training or certification, and ensuring that staff (and volunteers) performing work be trained and qualified based on project-specific requirements prior to the start of the work or activity. Program managers are also responsible for providing sufficient opportunities for staff to obtain any required training and certifications. In addition to maintaining accurate staff training records (as described below in Section 4.5 – Training Tracking), program managers should also document suggested or required minimum training needs by updating existing Supplemental Job Descriptions (see Section 4.1) and/or by creating a separate document recording such information.

DES personnel typically undergo training of various types. These include orientation of new employees, on-the-job training, in-house training, training conducted by the Division of Personnel's Bureau of Education and Training, participation in regional technical training programs involving USEPA Region 1 and other states in the region, and national training programs involving USEPA, other federal agencies, Not-for-Profit Organizations (NPOs) and Non-Governmental Organizations (NGOs).

DES program volunteers are required to attend training sessions designed and assigned by DES program managers. Other training activities may also be made available by the program managers as they see fit. Volunteers will also be encouraged to attend training activities sponsored by other agencies, NPOs and NGOs.

4.4 TRAINING PROGRAMS – QUALITY ASSURANCE

Program Managers and DES staff are encouraged to draw upon their educational background, experience, professional training, conferences, and on-the-job training to enhance their understanding and performance of quality assurance-related procedures. Records shall be kept of all quality assurance training attended, as described in Section 4.5 below.

The DES QA Manager Assistant QA Manager may arrange (and offer) or alert staff to courses that are available to satisfy staff quality training needs. The DES QA Manager, Assistant QA Manager, and the QA Team should participate in quality assurance training courses (offered by USEPA and others),

in order to enhance their knowledge and understanding of quality assurance issues, including techniques on implementation of effective quality management systems. The QA Manager, Assistant QA Manager, and QA Team will provide QA Awareness Training approximately every two to three years, or more frequently, as needed, based on the level of performance and participation in the DES QA System overall, or in particular, the Annual QA System Program Self-Assessment process. The target audience for such training is senior and middle managers overseeing programs that manage environmental data. Program staff are also invited to participate, however, management knowledge and support of the DES QA System is critical to its success.

To ensure that everyone at DES is aware of the importance of quality assurance and control, as well as DES's commitment to building and maintaining an effective quality management system, all new and current employees will be made aware of (primarily via e-mail communications), and all appropriate personnel (*i.e.*, those in programs that manage environmental data) will be encouraged to read the DES Environmental Data Quality Policy and this QMP, (including the shorter QA System Implementation Guidance), all of which are be posted for easy access on the DES Intranet Site under the "Quality Assurance at DES" folder.

4.5 TRAINING TRACKING

DES personnel training is typically tracked by including records of training programs attended in employee personnel files maintained by DES's Human Resources Unit. Program managers are responsible for ensuring that training records are forwarded to DES's Human Resources Unit in a timely manner, and that each employee's training file is kept up-to-date. New Hampshire Code of Administrative Rules of the Division of Personnel, Per 1501.03 requires copies of training records for state training and workshops (*i.e.,* training offered by the Division of Personnel, Bureau of Education and Training) attended by an employee to be placed in the employee's permanent personnel record that is kept at the Division of Personnel.

Documentation of quality assurance-related staff training (which is not normally offered through the Division of Personnel - Bureau of Education and Training) must be maintained in a known and retrievable location at the program level. Forwarding quality assurance-related training records to the DES Human Resources Unit is optional and is at the discretion of the individual program managers, as long as a viable training records management system is being maintained within the program.

DES program managers will track their volunteers' training efforts and maintain records of that training within their own program files. It is not necessary to forward volunteer training records to the DES Human Resources Unit.

As described in Section 4.4, the QA Manager and Assistant QA Manager, with support from the QA Team, will offer QA Awareness training at a minimum of every 2-3 years, or more frequently, as needed. The list of training invitees and actual training attendees will be documented and evaluated to determine the level of participation. This information will be used in conjunction with assessments of program participation and performance associated with the Annual QA System Program Self-Assessment process. Attendees of offered training will receive "Certificates of Completion" to document their participation in various QA training opportunities. The QA Manager or Assistant QA Manager will maintain and track (in a central location) an electronic and hardcopy list of individuals attending (and not attending) training, as well as copies of any "Certificates of Completion" distributed. For any QA-related training opportunities that the QA Manager, Assistant QA Manager, or any QA Team member became aware of (and communicated to DES employees), the QA Manager or Assistant QA Manager will document, and centrally maintain, a list of all DES employees ultimately participating in such training.

CHAPTER 5 PROCUREMENT OF EQUIPMENT, SUPPLIES AND SERVICES

5.1 PROCUREMENT OF EQUIPMENT AND SUPPLIES

DES is subject to a both state and federal requirements regarding the procurement of equipment and supplies. On the federal side, DES must comply with 40 CFR (Code of Federal Regulations) 33 – Procurement Under Assistance Agreements. The New Hampshire Department of Administrative Services, Division of Plant and Property Management, Bureau of Purchase and Property is the state agency responsible under authority of RSA 21-I for the purchase of all equipment and supplies for use by state agencies. Equipment and supplies are ordered in accordance with the requisitioning agency's specifications which are submitted in conformance with the provisions of N.H. Code of Administrative Rules Adm – Sections 100 - 400 and 600, Plant and Property Management Rules. DES staff requesting the purchase of equipment and/or supplies are responsible for ensuring that the equipment or supplies being ordered will meet their quality needs. They must prepare an internal requisition form, obtain signatures from supervisory and other staff as appropriate (*e.g.,* Information Resources Management Unit staff must review and approve all computer software and hardware-related purchases – See Chapter 7, "Computer Hardware and Software)," and then forward it to the Accounts Payable Purchasing Section within DES. Accounting staff prepare a formal requisition form and forward it to the Bureau of Purchase and Property. The requisition form contains specifications on the quality and performance of the item(s) being purchased (after review and signature by the supervisor responsible for oversight of the project), as well as others involved in the in-house approval process, as described above. DES staff work with the State's Purchasing Agent to ensure that all items ordered and received meet the required specifications as identified by the agency, and work with the Purchasing Agent to rectify any discrepancies that may occur.

In cases where equipment or supplies are being ordered for the first time, program managers may choose to survey their counterparts in other agencies or states engaged in comparable activities to ascertain useful information regarding specific equipment or vendors. This information can be used effectively when writing order specifications to limit vendor responses to those that are of the most interest and who are capable of supplying the best product for the task at hand. The Internet is also a useful tool that a project manager may use to see what is available prior to entering a procurement process.

The DES Facilities Services Section within the Administrative Services Unit of the Commissioner's Office is primarily responsible for tracking packages that arrive at DES's shipping dock. Packages that arrive through regular mail or that are directly delivered to staff or dropped off at the main DES Information Desk, while outside of the direct control of Facilities Services staff, are still tracked as described below. At regular intervals, Facilities Services staff visit the shipping dock to conduct an inventory of received goods. This is done by reviewing the packing slips, doing a general inspection of the packages, and recording relevant information (*e.g.,* vendor details, item number, number of packages, quantity, unit, detailed item description, date received and any comments on the condition of the packages) on a standard "Receiving and Inspection Report" (RIR) form. The packages, along with any packing slips or invoices, are then delivered to the appropriate requesting staff. Within one week, all staff in receipt of packages (regardless of how they came into the Department) are expected to inspect their order for completeness and to determine if the purchased items are undamaged and in working order. Full acceptance of the order is usually indicated by dating and signing the packing slip

or invoice, providing an appropriate account number, and forwarding the information to Facilities Services. The information is then cross-referenced with the RIR form and acceptance of the order is indicated. Once the order has been accepted and approved, Facilities Services staff provide a copy of the RIR form and/or signed packing slip or invoice to Accounts Payable staff where arrangements are made (in the form of a payment voucher) to pay the vendor. All information is entered into the State's Integrated Financial System (IFS). All payments require final approval by the Business Administrator of the DES Administrative Services Unit.

Any issues associated with orders are handled directly by the requesting staff. In this case, within one week, Facilities Services should be notified that there is a problem with the order. With this information, the order (or a particular item) is listed as rejected on the RIR form. A rejection notation on the RIR halts payment to the vendor until the issue is effectively resolved.

The RIR form is an important tracking tool for received goods. Each day, staff from Facilities Services sends out e-mail reminders to staff for unconfirmed orders dating back one week. Staff are reminded to inspect their orders and to let Facilities Services know (via a signed, dated packing slip or invoice) if the order is complete, undamaged, and if arrangements for payment should be made.

5.2 PROCUREMENT OF SERVICES

In the design of a environmental sampling plan or project, or as an ongoing, integral part of managing the department's many grant and loan programs, it is oftentimes necessary, and appropriate, to "outsource" services, that is, to enter into a formal agreement with another state agency, not-for-profit organization, or private company to provide a wide variety of environmental data support services. The handling of volunteer organizations is addressed elsewhere in this document. The vehicle for managing "outsourced" work may be in the form of a grant, loan, contract, or other formal legal arrangement such as an inter-agency Memorandum of Agreement/Understanding (MOA/MOU). A complete description of the department's grant and loan programs are available on the DES website at http://des.nh.gov/grants_loans.htm. While MOA/MOUs and loans are treated a bit differently, grant projects are typically conveyed and funded through rigorous state contracting procedures as described below. Most, if not all, outsourced activities and associated transactions, depending on the dollar amounts involved, require final approval and authorization by the Governor and Executive Council.

As an environmental monitoring or sampling program is designed, and grant projects solicited, specific quality assurance requirements and criteria are developed and communicated as part of the request for proposal (RFP) process, grant and loan application guidance and forms, and any upfront informational materials. For an example of grant guidance materials which clearly specify quality assurance expectations, please refer to the Water Division's 319 grant guidance documents available on-line at: http://des.nh.gov/wmb/was/info.htm. Quality assurance requirements and criteria are also used in evaluating, and ultimately selecting, an outside agency, organization, or company to provide the support services needed or to carry out an agreed upon grant project. A survey of agencies that are performing similar projects may be conducted to generate a potential vendor list which can then be used to screen vendor qualifications and competence. This information can be used to identify vendors which have already been certified by other agencies to perform the kinds of services being sought. This can expedite the vendor selection process because it is likely that a vendor who is already providing similar required services will have quality assurance procedures in place that can be "customized' to meet the needs of the DES program.

As with equipment and supplies, the process for procuring services is controlled by Federal regulations and by State statute and rules. The references of the major laws and regulations are as follows:

- 40 CFR Part 33 - Procurement Under Assistance Agreements
- RSA 21-I:22 - Procurement of Engineering Services
- Part Adm 311.07, N.H. Code of Administrative Rules - Service Contracts

40 CFR Part 33 outlines the general federal regulations for procuring all types of services and material. State laws and regulations give more specific requirements.

RSA 21-I:22 deals specifically with the procurement of engineering services. In summary, this process involves issuing a request for proposal (RFP), rating each firm that responds (using any necessary quality-based criteria), selecting a short list of qualified firms, evaluating these potential contractors via project presentations, and conducting final negotiations with the highest-ranked firm. In this manner, DES ensures that professional services will be provided with appropriate quality, and at a reasonable cost.

Part Adm 311.07 outlines the process for obtaining approval of service contracts through the N.H. Department of Administrative Services and the N.H. Governor & Council.

DES program managers initiate the procurement process by following the requirements of the above-referenced procedures, laws, and regulations. It is the program manager's responsibility to write the scope of services for the grant, loan, contract, or MOA/MOU (typically provided with the standard state contract as "Exhibit A – Scope of Services") in order to ensure that the vendor selected will be able to perform the desired services in conformance with specific regulations, methods, technical manuals, or quality assurance procedures applicable to the project. It is also the program manager's responsibility to monitor the contractor throughout the contract period, using the significant legal and financial leverage it affords, to make certain that the work is being performed (and satisfactory work products are being produced) to the standards (quality assurance and otherwise) specified in the scope of work. This is also accomplished by making contract payments, (as required as part of standard state contracting procedures in "Exhibit B – Payment Schedule"), contingent upon inspection and review of expected work products and outputs. If the work products or outputs are deemed satisfactory by the responsible program manager, the contractor invoice is dated and signed, an account number is provided, and the invoice is sent to the appropriate accounting staff depending on if the contract is based on federal or state funds. Any unique aspects of the contract are included as "Exhibit C – Special Conditions."

CHAPTER 6 DOCUMENTS AND RECORDS

6.1 DOCUMENTS AND RECORDS OVERVIEW

Each program within DES shall maintain a document and records system to suit its particular circumstances that complies with all applicable requirements. The system shall produce unequivocal, accurate records that document all program activities.

In general, data will be retained by the DES program that generated it. The data is usually kept in the site/case file or electronic database. For laboratory tests, the laboratory will keep its own separate record of the data.

It is preferable for data to be recorded in both paper and electronic form, although this may not be possible in all cases. Electronic data should be converted and/or updated to newer versions or technologies at least every three to four years so that the data is always in a readily retrievable format that has kept pace with ongoing information technology software and hardware advances.

Records must be kept in such a way that they can be retrieved. Each program will determine its own filing system, but ease of retrieval must be the goal. This applies to both paper and electronic files. If security is an issue, tools such as locks and passwords should be used. Hiding files is not proper security, and is not allowed.

Keeping needless multiple copies of data is discouraged in the interest of saving space and paper. In general, each program should only have one copy of any data set.

It should be noted that handling of documents used to support enforcement cases are subject to separate requirements. See chapter V of the DES *Compliance Assurance Response Policy (www.des.nh.gov/legal/carp/carp-ch-5.pdf).*

6.2 RETENTION OF DATA

All data should have a documented retention schedule. Some DES programs will need to keep data in perpetuity. Some programs have specific statutory or regulatory requirements for record retention. Other programs do not have any program-specific or other statutory/regulatory data retention requirements. In all cases, a data retention decision must be made, and it must be recorded.

Where a program manager determines that specific data is of extremely high value, a copy should be made and stored in a separate building. Program managers should be aware that this is sometimes done in the course of business. For instance, when a case is referred to the NH Department of Justice (DOJ) for enforcement assistance, a copy of the file is physically sent off-site to the DOJ office. Program Managers should keep records as to the exact disposition and location of the data deemed of such high value.

6.3 PAPER-BASED RECORD-KEEPING SYSTEM

a. The records shall clearly indicate the date of the field observation, sample collection, sample preparation, equipment calibration or testing, and other related activities.

b. The records shall include the identity of personnel involved in making observations, collecting field data, sampling, preparation, calibration, or testing.

c. The record-keeping system shall facilitate the retrieval of all working files and archived records for inspection and verification purposes.

d. All documentation entries shall be signed or initialed by responsible staff. The reason for the signature or initials shall be clearly indicated in the records such as "sampled by", "prepared by", or "reviewed by".

e. All generated data except those that are generated by automated data collection systems, shall be recorded directly, promptly, and legibly in permanent ink.

f. Entries in records shall not be obliterated by methods such as erasure, overwritten files, or markings. All corrections to record-keeping errors shall be made by one line marked through the error and initialed. These criteria also shall apply to electronically maintained records, where applicable.

6.4 COMPUTER AND ELECTRONIC DATA REQUIREMENTS (See Section 7.6, "DATA ENTRY FOR DES DATABASES")

a. All computer software must have documentation associated with it and must be adequate for its intended use. The Office of Information Technology is responsible for cataloging and maintaining proper documentation.

b. Procedures must be established and implemented for protecting the integrity of data; such procedures shall include, but not be limited to integrity of data entry or capture, data storage, data transmission, and data processing.

c. Necessary environmental and operating conditions must be maintained to ensure that computer and automated equipment functions properly and that the integrity of calibration and test data is not compromised.

d. Procedures must be implemented for maintaining the security of data, including the prevention of unintended deletion and unauthorized access to, and amendment of, computer records.

6.5 RECORD MANAGEMENT AND STORAGE (See Sections 6.2, "RETENTION OF DATA", and 7.8, "NETWORK MANAGEMENT, DATA BACK UP, AND DATA RECOVERY PROCEDURES")

a. Records shall be maintained in a safe, secure, and retrievable manner.

b. Records stored only as electronic media must be supported by the hardware and software necessary for retrieval.

c. Records should be saved to the DES network, not to local hard drives, to ensure that the data will be backed up to tape.

d. Records that are stored or generated by computers shall have hard-copy or write-protected back-up copies

e. Access to archived information shall be documented with an access log.

6.6 QUALITY SYSTEM DOCUMENTS & DOCUMENT CONTROL

a. Controlled documents typically include the following:

1) The DES QMP;
2) Various QA-related policy and guidance documents;
3) All QAPPs; and
4) All other monitoring, sampling or analysis plans, and SOPs developed under the QMP at the program level.

b. The most up-to-date version of the QMP, QA System Status Report, QA Policy, various QA-related guidance, training documents, and QA System-wide SOPs, and select QAPPs (at the discretion of the QA Manager, Assistant Manager, and QA Team), will be posted on DES's Intranet page under the "Quality Assurance at DES" folder and on the Internet at: www.des.nh.gov/qa.

c. With the exception of QA System-related SOPs, most SOPs are primarily reviewed and approved by program managers at the program level. As such, these program-level SOPs are not typically posted on the DES Intranet or Internet QA sites.

d. The reports of programs' annual reviews are not considered 'documents', and therefore will not be posted on the DES Intranet or Internet site.

e. As experience and circumstances dictate, additional documents or classes of documents or records may be added to the list of controlled documents. Decisions regarding posting documents on the Intranet or Internet will be at the discretion of the QA Manager, Assistant QA Manager, and the QA Team.

f. After drafting by program personnel, with assistance as needed by the QA Team, all controlled documents (with the exception of program-level SOPs), must be approved by the QA Manager or Assistant QA Manager before use.

g. When a document is updated, following approval of the updated document by the QA Manager or the Assistant QA Manager in the absence of the QA Manager, and if necessary, by USEPA, the most recent copy of the document will be distributed to program staff. Electronic distribution is encouraged. All previous, outdated versions of the document will be discarded, except that the QA Manager will retain one electronic or hardcopy of all obsolete documents for archive purposes.

h. The Program Manager has the responsibility for distributing updated documents within the program. Appropriate staff distribution lists should be documented and maintained. The QA Manager and QA Team have the responsibility of ensuring that the documents posted on DES's Intranet under the "Quality Assurance at DES" folder and on the Internet site (www.des.nh.gov/qa) are the most updated versions.

i. The Program Manager also has the responsibility for ensuring that their staff uses the most recent documents. Obsolete documents must be removed and destroyed, except for the

single copy kept by the QA Manager. Electronic document control is very useful in this regard; it should be used whenever possible.

j. All controlled documents will be marked with a revision date, and version number using a footer at the bottom of each page of the document.

k. The QA Manager will retain copies of the annual QA System Status Reports and of the programs' annual reports. The QA Status Reports will be posted on the DES Intranet site.

CHAPTER 7 COMPUTER HARDWARE AND SOFTWARE

This chapter describes how DES manages its computer hardware and software to ensure that it supports environmental data quality needs of programs throughout the Department. Computer hardware and software issues covered under this section, include, but are not limited to, design, data handling, data analysis, modeling of environmental processes and conditions, operations, and data bases containing environmental data.

Note: The Information Resources Management Unit no longer exists within DES as it previously did due to the fact that in early 2003, the State of New Hampshire went through a centralization of Information Technology resources and is now fully reorganized under a new Governor's Office of Information Technology (OIT). While the reorganization has been completed and is wide-spread, the general quality assurance-related information technology functions and processes described in the pertinent QMP chapters remain largely the same. The OIT homepage is located at: http://toolbox.oit.nh.gov/index.htm.

7.1 *DES STRATEGIC INFORMATION TECHNOLOGY PLAN (SITP)*

As described in DES QMP Section 2.1.2.1, the State of New Hampshire Office of Information Technology (OIT), is responsible for all computer hardware and software and related issues, including purchasing, installation, maintenance, technical support, and database development. OIT must operate under statewide policies and procedures for computer equipment and use. Specifically, OIT's activities are directed by the *SFY 2004-2007 DES Strategic Information Technology Plan (SITP)*, or later version, which is located on the DES Intranet at: http://intranet/irmu/04-07sitp.ppt. The purpose of the department's SITP is to build a better framework for the integration of its information management systems and to take a more systematic approach to improving the manner in which environmental information is managed. The strategic objectives of the *SITP* include:

a) Real-Time Access to Environmental Information
b) Intra, Inter-Agency Information Sharing
c) Public Access vs. Privacy
d) Public Access vs. Homeland Security
e) Performance Measurement
f) Regulatory Streamlining w/out "Giving Away the Environment" (efficiency v. effectiveness)
g) Manual → Automated (Get information online)
h) Paper → Electronic (make it available online)

The DES *SITP* provides a comprehensive summary of current IT services throughout the agency, and documents a systematic and integrated plan to improve guidelines for agency development of information systems, reduce barriers to information sharing, and optimize the Department's use of IT resources.

The Department maintains an Information Management Steering Committee comprised of an administrator from each Division. This committee, along with the OIT Team Lead for DES, reviews and approves recommendations for information system changes to support the vision, mission, and guiding principles of the DES Strategic Plan. This committee, along with a team of senior management staff, is committed to provide direction and guidance to IT planning and to supporting this agency's business needs with cost-effective IT solutions.

7.2 OIT SERVICES

OIT provides both centralized and decentralized functions. Administrative and technical service functions are typically operated and located directly within the central OIT infrastructure. However, a number of OIT staff are assigned to provide dedicated technical and database development support to a particular user group (at the Division, Bureau, Section, or Program level) within the Department. Providing dedicated staff to specific user groups allows for more direct, timely, specialized, and efficient customer service for these user groups, each of which have unique computer hardware and software needs.

7.3 OIT HELP DESK

In July of 2004, OIT instituted a State-wide Help Desk system which includes a voice and e-mail user interface and an associated Track-It database system for tracking, responding to, and completing all requests for software- and hardware-related issues. This Help Desk solution allows all technical inquiries and purchase questions to be centrally managed and processed in an efficient manner. By tracking problems, solutions, and requests, the system also facilitates the transfer of knowledge to technical support staff who can be more responsive to end users. The Help Desk, in combination with centralized hardware and software acquisition, hardware and software compatibility, database development, and data backup procedures described below, have resulted in an efficient system that helps to ensure that any hardware or software issues, or other issues related to changing needs or problems can be effectively addressed.

7.4 HARDWARE AND SOFTWARE ACQUISITION

Hardware and software purchases and contracting for IT services at DES must be done in accordance with OIT procedures as well as those listed in Chapter 5 above. The OIT purchasing procedures, as well as "Standard Products," can be found on the OIT website for easy access at: http://toolbox.oit.nh.gov/index.htm. Two related IT policies, "Computer Hardware Policy" and "Computer Software Policy" are located on the DES Intranet site. In addition to meeting all the requirements set forth in the *SITP*, and the computer hardware and software-related policies, all hardware and software purchased by DES must follow the requirements set forth in the current State computer contract. As a general rule of thumb, all hardware and software purchases, as well as installation and maintenance are fully subject to internal control, review, and approval by OIT.

The purchasing process begins with the requesting staff seeking assistance from the Help Desk and/or the OIT staff assigned to their particular bureau, section, or program for the purpose of ascertaining specific data quality and system performance needs. Once the data quality and system performance needs have been determined, the requesting staff must provide written documentation of their need for computer hardware and/or software. Such documentation shall consist of an acquisition form and will provide information on the following items: 1) Description of the item to be acquired; 2) Need and justification for the acquisition; 3) Total cost of the purchase; 4) Compatibility with existing hardware and software; 5) What training will be required to make effective use of the technology; and 6) What alternatives were considered. Once all of this information has been gathered, the requesting staff must get Division Director approval for the acquisition.

If the acquisition is less than $5,000, the OIT Liaison will review the request to ensure conformance with *DES' SITP,* to confirm that minimum hardware specifications have been met, and that all required

information has been submitted, and then forward it to the DES Administrative Services Unit for processing of the order. See Section 5.1 of this QMP, "Procurement of Equipment and Supplies".

If the computer hardware or software purchase is over $5,000, the OIT Liaison must review the *DES SITP,* to determine if the purchase is in alignment with the projects outlines in the *SITP*, and also must make a recommendation to the OIT to approve or disapprove the acquisition. For purchases over the $5,000 threshold, final approval must be granted by OIT via a standard justification procedure. The OIT Liaison prepares the purchase request for approval packages for all requesting divisions, bureaus, sections and/or programs and forwards them to the OIT. Once such approval is granted, the purchase request will be forwarded by OIT Liaison to the DES Administrative Services Unit for processing.

Upon receipt of the acquired hardware and/or software, it will be barcode labeled or given a DES identification tag, and added to the Department's inventory. OIT Systems staff will coordinate the proper setup and/or installation of all hardware and software purchased, and will ensure that related warranty and registration information has been properly processed. Software and associated documentation are typically stored and maintained by OIT staff.

7.5 MEETING DEPARTMENT STANDARDS AND USER DATA REQUIREMENTS FOR HARDWARE AND SOFTWARE

As described above, there are several procedures already in place to ensure the all hardware and software purchased or used at DES meets minimum performance and compatibility standards. As an integral part of these procurement procedures, requesting staff will meet with appropriate OIT staff (i.e., those staff assigned at the Division, Bureau, Section, or Program level) to discuss in detail individual performance and data quality needs. This internal consultation will also take place in those instances where software will not necessarily be purchased, but received from outside organizations such as the USEPA for in-house use. Regardless of how the hardware or software is procured, the results of this internal consultation are to be documented in order to ensure that specific user needs have been met.

An important function of OIT is the development of customized in-house applications throughout the Department. These databases are diverse and essential to Department operations. They serve internal administrative needs (e.g., accounting, time allocation, staff leave, etc.) as well as specific environmental program needs. Many DES programs could not function without these databases, most of which manage key environmental information such as ambient and point-source monitoring data, modeling data, permit and inspection activities, enforcement case tracking, site-specific conditions, site-specific clean-ups, etc. Many of these databases allow for, and require communication with, a number of databases and systems outside of the Department for the purpose of uploading and downloading data with environmental databases managed by the USEPA.

Upfront and on-going communications between Program Managers and assigned OIT staff is essential to make sure that any new application developed internally fully meets the end user's data quality and system performance needs. The Help Desk system and dedicated OIT staff are resources that will ensure that those applications are maintained, updated, and otherwise continue to deliver the level of service, functionality and quality data desired.

7.6 DATA ENTRY FOR DES DATABASES (See Section 6.4)

Programs must have procedures in place to ensure that errors or inconsistencies are minimized or eliminated during data entry into the many DES computerized data systems. Each computerized data system, which is uniquely designed to handle data specific to a particular program, may have built-in mechanisms to screen for valid data and appropriate data relationships. If not, procedures must be in place, and staff training provided, to ensure that program staff are able to effectively evaluate the quality of the data being entered and to spot and correct potential errors or inconsistencies. Specific procedures and processes for assuring accuracy and timeliness of data entry will vary with each program.

7.7 PROCURING INFORMATION TECHNOLOGY-RELATED SERVICES

Procuring IT-related services essentially follows the procedures outlined above for "Hardware and Software Acquisition, Section 7.4, in combination with those described in Section 5.2, "Procurement of Services." Program staff must consult with OIT staff to determine project needs and specifications. A formal request and approval process is already in place, with checks and balances being provided by OIT and depending on the dollar amount and type of requested service, DES Commissioner and/or New Hampshire Governor and Council sign-off.

7.8 NETWORK MANAGEMENT, DATA BACK UP, DATA RECOVERY PROCEDURES, AND VIRUS PROTECTION

There are specific operating procedures in place to help minimize the loss of key electronic data across the many important databases throughout the Department. These procedures include how frequently the back up functions should be performed and how the back up tapes and other data retrieval methods are to be handled, labeled, and stored, both on-site and off-site, all in an effort to have, within a worse case scenario, no more than one work day's worth of data loss. OIT has a multi-tiered approach to disaster recovery for data systems, including contingencies for both hardware and software failures due to power interruption and other scenarios. Finally, OIT staff maintain aggressive computer virus and SPAM protection programs (utilizing the most up-to-date software) in order to keep the 625 machines (servers, desktops, and laptops, and peripheral equipment) used by approximately 500 users, operating smoothly and safely and ensuring that key data and systems remain uncorrupted.

CHAPTER 8 PLANNING AND IMPLEMENTING QUALITY PROCESSES

Planning and implementing environmental data operations must be done in a systematic way in order to ensure that data or information collected are of needed and expected quality for their desired use. Following such a process helps to ensure the ultimate success of any individual environmental data operation. Included in this chapter is guidance on processes that program managers must follow before and during data gathering or analysis.

Specifically, Chapter 8 presents an overview of the steps involved in the planning and implementation aspects of DES's Quality System (Sections 8.1 and 8.2). It also provides detailed descriptions on how program staff are to address:

a) Data quality objectives (DQOs), including when documents such as QAPPs are needed (Section 8.3);
b) Sampling (Section 8.4);
c) Field testing (Section 8.5);
d) Fixed laboratory testing (Section 8.6);
e) Environmental condition data (Section 8.7); and
f) Reporting of Results (Section 8.8).

It is recognized that in addition to planned and long-term routine environmental data operations, there are also instances where the immediate need for a data operation arises from an unplanned event, emergency situation, or some other cause that imposes a constraint on the amount of time available to meet the requirements of the formal systematic planning process and the development and approval of QAPPs and similar internal documents as described below. Staff shall use their best judgment in determining the flexibility needed from the requirements of the following sections in these instances, and document the decision in a memo to the file for that data operation.

8.1 PLANNING OVERVIEW

The primary DES documents used as planning inputs to the overall system are: 1) department-wide and division-wide strategic planning work; 2) budget documents; 3) the Performance Partnership Agreement (including a comprehensive set of work plans for all DES Divisions and Bureaus/Units) and Performance Partnership Grant with USEPA New England; 4) local, state, and federal rules and regulations; 5) technical standards used by the various programs; and 6) the various QAPPs already in place.

The key staff in the area of planning and implementing quality processes are the program managers and the project managers that a program manager assigns to complete individual tasks. Using the documents referenced above, and considering the goals of an individual project, the following steps must be followed by program managers or their designees in planning any of the processes required by this QMP.

The overall planning goal is to produce written documentation describing how the data will be acquired, analyzed, evaluated, and assessed against its intended use and the quality performance criteria. The form of this document will be program-specific. In some cases, memos to staff will suffice.

However, it may be necessary for the program manager to develop more specific quality assurance documents. One of the most common such documents is the Quality Assurance Project Plan (QAPP), which is typically required with USEPA-funded activities. QAPPS will be prepared in accordance with this QMP and other relevant QAPP guidance documents including, but not limited to (depending on the nature of the project): a) *USEPA Requirements for Quality Assurance Project Plans, QA/R-5, March 2001, EPA/240/B-01/003,* or later edition; b) *EPA New England Quality Assurance Project Plan Program Guidance*, *April 2005*; and c) *The Volunteer Monitor's Guide To Quality Assurance Project Plans* (www.epa.gov/owow/monitoring/volunteer/qappcovr.htm).

The QA Manager, Assistant QA Manager, and the QA Team are a resource to program managers tasked with developing QAPPs and related documents. A QAPP should be considered when:

a) A funding agency requires it.
b) There are serious public health and/or environmental impacts.
c) A matter is under litigation, enforcement or a court-ordered schedule, and therefore may be highly scrutinized.
d) A program is being implemented for the first time; or
e) The program has a research aspect.

DES programs that are required to develop QAPPs by USEPA or other funding agencies, but have not yet done so, will provide the DES QA Manager and Assistant QA Manager with a development schedule and complete such QAPPs following this schedule. All draft QAPPs must be reviewed and approved by the DES QA Manager or Assistant QA Manager (via signature on the QAPP Approval Page) prior to submittal to USEPA New England for final review and approval. The Assistant DES QA Manager will conduct the required review and approval step in the event of the DES QA Manager's absence.

There are two instances where QA documents reviewed and approved by the DES QA Manager or Assistant QA Manager do not require subsequent submittal and approval by USEPA New England. The first instance (described later in this section) involves the use of Sampling and Analysis Plans (SAPs) or Site Specific Plans (SSPs).

The second involves a January 30, 2006 Memorandum of Agreement (MOA) between USEPA New England and DES pertaining specifically to QA approvals for QAPPs generated by or for DES for Section 319 projects that involve non-monitoring data collection. The New Hampshire 319 Grant Program makes funds available through Watershed Assistance and Restoration Grants that are appropriated through USEPA under Section 319 of the Clean Water Act. A project under the 319 Grant Program must plan or implement measures that prevent, control, or abate nonpoint source pollution. If the project involves the collection, analysis, or manipulation of environmental data, it typically requires a QAPP. Traditionally, projects have used sampling and monitoring methods to collect environmental data and show a measurement of success in reduction of pollutants from the project.

In recent years, with the development of more accurate pollutant loading estimation models, many projects are using pollutant loading estimates, through modeling, as a surrogate to collecting data through sampling or monitoring. These projects are considered "non-monitoring" projects and, despite not physically collecting samples, are technically still subject to QAPP requirements. However, under the January 2006 MOA, DES is authorized to review and approve this specific type of QAPP, as long as the process includes review and approval (including signature/date on Title and Approval Page) by

the DES 319 Program Manager; DES Section 319 QA Coordinator; and either the DES QA Manager or Assistant QA Manager.

Because the scope of non-monitoring 319 projects are often less involved than projects using traditional sampling and monitoring, an abbreviated QAPP format for these projects was developed by QA staff in the Watershed Assistance Section in order to streamline the QAPP development and approval process. Potential grant recipients are given access to the streamlined non-monitoring project QAPP, titled *Abbreviated Quality Assurance Project Plan for Non-monitoring Project Involving Pollutant Load Reduction Modeling or Engineering Calculations*, via an on-line Request for Proposal process on the Watershed Assistance Section's website at http://des.nh.gov/wmb/was/QAPP/. Revisions to the abbreviated QAPP referenced above will be reviewed and approved by the DES Section 319 QA Coordinator, DES QA Manager or Assistant QA Manager, and USEPA New England QA Unit staff.

Under the January 30, 2006, MOA, 319 non-monitoring QAPPs which receive QA approval by DES will only require submittal to the appropriate USEPA Project Officer for review and approval. For a five-year period (ending January 30, 2011), USEPA New England's QA Unit no longer reviews and approves this type of QAPP. The current MOA is subject to an annual review, upon which either party can terminate the Agreement with 30 days notice.

The QA Manager, in cooperation with the relevant program managers, is responsible for tracking the development of any required QAPPs. The process the QA Manager uses for tracking the receipt, review, and approval of QAPPs and SAPs/SSPs is documented in an SOP, the most updated version of which is located on the DES Intranet site under the "Quality Assurance at DES" folder. An in-house QAPP tracking system (currently a Microsoft Excel Spreadsheet – previously a table in Microsoft Word format) is the tool for maintaining such information. Per DES's agreement with USEPA, the DES QA Manager, or the Assistant QA Manager in the absence of the QA Manager, will coordinate and submit to USEPA biannual updates of the DES QAPP Inventory Table, which currently includes detailed listings of all pending and completed QAPPs, as well as SAPs/SSPs that DES is either directly, or indirectly (*i.e.,* under a grant and/or sub-contract arrangement), through a grant process or other agreement.

This planning task can be done at two different scales, which are described in terms of QAPPs; the Generic, or Program QAPP, and the Project-Specific QAPP. The Project-Specific QAPP is a single planning document that covers all the QA issues for a single, finite project. This has been the most commonly followed model.

However, a Generic or Program QAPP, can be useful. The Generic QAPP is useful when a program knows it will be doing certain work tasks repeatedly. Groundwater sampling at Superfund sites is an example – the actual sampling and testing is similar at all sites, so the planning document is prepared once. This Generic QAPP can cover description of the program and its organization; general personnel information indicating the types of positions/titles that will be assigned various tasks; data quality objectives; documentation and record needs; data assessment and corrective action procedures; and monitoring and sampling procedures. The Generic QAPP is reviewed for appropriateness annually and has a five-year life span. Using Generic QAPPs can save a program much document preparation time when the program knows that similar work will be repeated.

In this case however, for each individual project (or individual site) to continue the Superfund example, another simpler document would be required. The purpose of this document, which is

defined in DES's QA System as a Sampling and Analysis Plan (SAP) or Site Specific Plan (SSP), is to record the information for a specific job that is not included in the Generic QAPP. SAPs or SSPs will be prepared by the Project Manager, in conjunction with the appropriate field staff, reviewed and approved by the Program Manager prior to the fieldwork, and a copy retained in the program files. A copy of the approved SAP/SSP will be sent to the DES QA Manager or the Assistant QA Manager in the absence of the QA Manager. The Project Manager is responsible for communicating the SAP/SSP and other QA/QC requirements to other field sampling staff that may be working on the project.

The SAP/SSP will reference its parent Generic QAPP. Deviations from, and stipulations not addressed in the Generic QAPP, will be incorporated into the SAP/SSP. Additional information will be considered and added on a case-by-case. Also, the Project Manager will be responsible to locate or produce procedures for any deviations and stipulations, in particular, sampling and testing required for a project that is not described in the Generic QAPP. SAPs/SSPs may include some or all of the following information:

- Site information: Site map, sampling location plan, project description, and schedule;
- Personnel information: Name and/or title of the individuals conducting the work; and
- Site-specific variances: Any issue with the site that requires a variance form the work anticipated and described in the Generic QAPP, (e.g., new analytes or media, new equipment, etc);

As the SAP only applies to a specific project, like the Project-Specific QAPP, its life span is the same as the project to which it applies. Therefore, when work is done under formal QAPPs, there are two scenarios that can be followed: Either a Project-Specific QAPP, or a Generic QAPP *and* a site-specific SAP, if necessary.

Regardless of the final form the planning document takes, (whether it be a required, formal project-specific or generic program QAPPs or a DES-only quality assurance document) it will fulfill requirements described in Sections 8.3 through 8.8 of this QMP, and as such must be sent to the QA Manager, or the Assistant QA Manager in the QA Manager's absence, for review and approval. The Assistant DES QA Manager will conduct the required review and approval step in the event of the DES QA Manager's absence. QAPPs required by USEPA will be sent to USEPA for approval by the QA Manager, or if agreed to by the QA Manager, by the program manager. Approval of the planning document is required before the work described in the plan can be initiated.

The quality planning steps listed below apply to many work tasks, especially writing new SOPs and planning new work.

1. Identify (and involve) an individual project manager. Other parties must also be identified and involved as appropriate, such as the sponsoring organization (if apart from DES) and its responsible officials, DES project personnel, and other stakeholders such as legislators or other government agencies, scientific experts, community activists, etc. The intent is to identify all customers for the data and all suppliers of the data. The program manager is responsible for this step.

2. Describe the project goal, objectives, and questions and issues to be addressed in writing and communicate them to the parties identified in step 1. Consider the potential uses of the data. The project manager is responsible for this step; the program manager reviews and approves it.

3. Identify the project schedule, required resources (including budget), milestones, and any applicable requirements (e.g., regulatory and contractual requirements). The project manager prepares this for the program manager's approval.

4. Identify the type and quantity of data needed and how the data will be used to support the project's objectives, and communicate this to relevant parties. This is the program manager's responsibility, but should be a collaborative process among parties identified in step 1. The data must meet the needs of the intended audience (*i.e.,* its "customers"). This is not to presuppose what the data will show but rather to ensure that the questions that need to be answered can be answered with the data to be gathered. Also, this step can identify when work is not necessary – if there are no customers for the data, then the program manager should consider putting the resources to other uses.

5. Identify the performance criteria for measuring data quality, including any statistical methods proposed, and ensure that the criteria are understood by relevant parties. This is the program manager's responsibility, but should be a collaborative process among parties identified in Step 1.

6. Identify the QA/QC activities necessary to assess the quality performance criteria (*e.g.,* QC samples for both the field and laboratory, audits, technical assessments, performance evaluations, etc.) and ensure that they are understood by relevant parties. This is the project manager's responsibility, although he/she should consult with laboratory or other parties as needed.

7. Determine how, when, and where the data will be obtained (including existing data) and identify any constraints on data collection, and document these in writing. This is the project manager's responsibility. The use of existing data is strongly encouraged, provided its quality is known and is appropriate for the project; new data should be used to fill gaps in existing data or to determine if the situation described by the existing data has changed. When new data is to be generated, the sampling and analysis procedures must be documented. Design of a sampling and analysis program must explicitly include how it is anticipated that the program will meet the DQOs.

8. Consider whether it is appropriate to evaluate and qualify data from non-DES sources, especially data gathered or analyzed by contractors, volunteers or other organizations such as universities or other research organizations. The project and program managers share this responsibility and should document their decisions. The QA Team and DES management must be involved as necessary to ensure proper relationships with the outside parties. This issue must receive special attention from the project and program managers to ensure that this class of data is usable and defensible. As noted in other chapters of this QMP, training, procurement of services, record keeping, and assessment and corrective actions are all areas that must be specifically addressed. When volunteers are used, training and oversight of the volunteers should be a focus. Volunteers are an enormous resource to DES, but program managers must ensure that volunteer-generated data remains useful to the program and not be vulnerable to criticism by potential data reviewers.

8.2 IMPLEMENTATION OVERVIEW

The DES Senior Leadership Team is ultimately responsible for assuring that all work DES undertakes is done to appropriate standards. That responsibility is delegated to various program managers through the structure of DES. The QA Manager is ultimately responsible for ensuring that all DES staff understand the DES quality system. The QA Manager and Assistant QA Manager, with the assistance

of the QA Team, provides assistance to the program managers to implement the DES quality system and reviews and approves the various required documents.
In the absence of directions otherwise in a program or project-specific document, the following structure applies:

1. Program managers are responsible for ensuring that written procedures are prepared and that staff are adequately trained in their use.

2. Project managers are, in general, responsible for ensuring that the actual work is carried out properly, and for alerting their chain of command of problems as they arise. In that case, the program manager must assist the project manager to address the problem. The QA Manager, Assistant QA Manager, or member of the QA Team, will assist the program manager as requested. Chapter 9, "Assessment and Corrective Action," discusses this aspect in more detail. All such corrective actions must be documented in the annual report the program manager makes to the QA Manager or Assistant QA Manager. The program manager and the project manager are responsible for communicating changes to relevant staff. The project manager ensures that obsolete procedures are removed;

3. Program managers are responsible for annually reviewing the quality system within their programs and reporting the results of that review to the QA Manager or Assistant QA Manager. Such a review of the quality system shall include an assessment of all multi-year, approved project-specific QAPPs and generic program QAPPs. A convenient time (due to its occurrence during the winter months) to conduct an annual QAPP review is as part of the required DES Annual Quality System Program Self-Assessment, the results of which are due to the DES QA Manager or Assistant QA Manager by 1/31 of each year (See Section 9.0). The results of this review must be documented and forwarded to the DES QA Manager in the form of a memo outlining any changes necessary to ensure that the processes and procedures outlined in the QAPP will continue to result in high-quality data that can be used for its originally-intended purpose. If the needed revisions/updates are considered minor and do not affect data quality, a memo summarizing them will suffice. If the revisions are major (*i.e.,* they are substantive and *will* affect data quality), then the results must be summarized and the QAPP revised for re-review and re-approval via the DES QA Manager (or the Assistant QA Manager in the QA Manager's absence) and relevant USEPA QA staff. The results of all reviews associated with formal, USEPA-approved QAPPs, (and any revised QAPPs) will be forwarded to USEPA QA staff by the DES QA Manager, or Assistant QA Manager in the QA Manager's absence, for their QAPP records.

4. Program managers are responsible for ensuring that their project managers and other staff have the information and resources necessary to do their work in accordance with all DES regulations, policies and guidance that apply to technical issues and to QA/QC issues;

5. DES staff are individually responsible for carrying out the tasks assigned to them in accordance with DES policy and their supervisor's instructions, which includes instructions described in this QMP related to data quality; and

6. In the case of volunteers or data gathered by others, the project manager is responsible for reviewing the data and flagging or removing data of questionable or unusable quality. All such instances must be annotated so that persons reviewing the data will understand what happened and what the data limitations were. Any such instance not deemed to be isolated must be addressed through the Assessment and Corrective Action processes outlined in Chapter 9.

8.3 DATA QUALITY OBJECTIVES

Before any sampling, monitoring, or testing is conducted, the program manager must determine, document, and communicate data quality objectives (DQOs) to the relevant program staff, participating organizations, and laboratory staff (USEPA document G-4, *Guidance on Data Quality Objectives*). All sampling, testing, and recording of environmental data is done for a purpose; data is not gathered for its own sake. The procedures used for the effort must be appropriate for the use of the data. The purpose of the sampling or testing must be recorded.

In order to determine DQOs, program managers must consider and document decisions regarding the following:

1) What decisions will be made using this data;
2) What is to be communicated by using this data;
3) Will a prospective decision remain the same regardless of what the data shows; and
4) If there is nothing to be communicated by this data, is it necessary to gather the particular data.

DQOs should be discussed with program staff, participating organizations, and laboratory staff so that methods and detection levels can be agreed upon prior to sampling. The laboratory should also be included in any discussion of time frame for sampling and numbers of samples so that laboratory capacity will be available to handle the influx of samples from a large project. These steps are imperative to assure the reliability of the data.

As described in Section 8.1, however, it may be necessary to develop a QAPP, which will be prepared in accordance with this QMP and other relevant QAPP guidance documents including, but not limited to (depending on the nature of the project): a) *USEPA Requirements for Quality Assurance Project Plans, QA/R-5, March 2001, EPA/240/B-01/003,* or later edition; b) *EPA New England Quality Assurance Project Plan Program Guidance*, *April 2005*; and c) *The Volunteer Monitor's Guide To Quality Assurance Project Plans* (www.epa.gov/owow/monitoring/volunteer/qappcovr.htm).

8.4 SAMPLING

Sampling is the collection of material to be tested or examined (refer to Section 8.7 – "Environmental Condition Descriptions and Data" for considerations more specific to taking measurements such as water levels in the field). The object of any DES sample collection effort is to generate data that can be communicated and used to support DES decisions and actions.

Each program manager is responsible for ensuring that sampling activities are defined, controlled to the extent required, verified, and documented. Written sampling procedures must be followed in all instances. Wherever feasible, sampling procedures written by others, such as *Standard Methods for the Examination of Water and Wastewater*, or various USEPA guidance documents, should be included or reference in the procedures. In those cases, care must be taken to ensure that the most up-to-date, approved edition is used. The written procedure must be a stand-alone document sufficient to allow staff to do the work to the required quality standard.

Where sampling procedures written by others are not available, the program manager must ensure that a program-specific procedure is produced and made available to staff. Existing procedures for similar testing should be used as models whenever possible. The program manager prepares, and has

responsibility for, the procedure. The QA Manager, Assistant QA Manager, and the QA Team are available to assist with developing the procedure.

The sampling procedure to be used must be reviewed and agreed upon before leaving for the sampling trip. This is necessary to avoid confusion in general, but especially to ensure that proper sampling containers and equipment are taken. When samples are to be returned to the laboratory, it is recommended to check with the laboratory's personnel before going on the sampling trip. See Section 8.7 of this QMP for information on taking field notes.

When deciding what procedure to use for any sampling effort, the following considerations must be factored in:

a) If the data may be used to support an enforcement case, documentation and adherence to procedures becomes even more important. See the DES Website for DES's *Assurance and Response Policy (CARP), Chapter IV - (www.des.nh.gov/legal/carp/carp-ch-4.pdf)*.

b) Sampling personnel must be trained in the use of the equipment, and records of the training must be kept.

c) Quality Assurance/Quality Control steps necessary to meet the DQOs must be established.

d) If the location is being sampled for the first time, be certain to record the location and mark it in the field as necessary.

e) When samples are to be taken at the same location again, be certain that the location is marked and accessible. Accurate notes should be taken to allow others to find the location.

f) How the samples will be transported to the testing or examination location must be established.

g) If other agencies or parties will be taking split samples, appropriate arrangements must be made. DES will give these other parties full cooperation.

h) If people living near the sampling location, or local authorities, are interested in the sampling effort, the program manager must make appropriate arrangements for communications with any affected parties and the public. The decision regarding such communications should be recorded, and a log maintained for all communications. All DES personnel must be aware that they work for the people of New Hampshire and must be informative and polite.

When sampling is done by others, either by private parties (including volunteers) who are reporting results to DES or by parties such as contractors working as DES proxies, the same sampling procedure issues apply. It is the program manager's responsibility to ensure and verify that these other parties are using appropriate written sampling procedures. This may include review and approval of the other party's procedure.

Sampling procedures, together with any required Health and Safety Plan, and if applicable, MSDS sheets for chemicals employed, must include information on choice of sampling equipment, decontaminating or discarding the sampling equipment, personal protective clothing or equipment needed, containers and preservation needed for the sample, any requirements related to transportation to the testing location, and field documentation requirements. Sampling procedures, training records

and other documents described in this section, are subject to the requirements in Chapter 6 of this QMP, "Documents and Records."

As part of annual program assessments, program managers must review their sampling procedures, and the results of that review (with recommendations for improvements or other changes) must be forwarded to the QA Manager, or the Assistant QA Manager in the QA Manager's absence. This review must include checking to be sure that the QA/QC measures in the procedure are sufficient to meet the established DQOs. Where procedures produced by others are used, a review must also be done, but it can be limited to ensuring that the most recent guidance is still being used**.** As described in Chapters 9 and 10, the QA Manager, Assistant QA Manager, the QA Team will evaluate the review and assist the program manager to implement the recommended changes.

8.5 FIELD TESTING

Samples may be tested or examined in the field, that is, in close proximity to the location where the sample was taken. The decision as to whether field or fixed laboratory testing is appropriate is the responsibility of the program manager. Program managers should be aware of technological advances which allow for more high-quality field testing than has been available in the past.

Where samples are examined or tested in the field, documentation must take place immediately upon testing, following established guidance for documentation. See Section 8.7 of this QMP for information on taking field notes. The field personnel must not rely on memory and record results later. Field testing equipment must be calibrated per the manufacturer's recommendations, and calibration records must be kept. If calibration is done in the field, staff should keep this information with the field notes and put a copy of these calibration records in the file.

When deciding what procedure to use for any field testing effort, the following considerations must be factored in:

a) It must be known what compounds are being tested for, in what medium, and what detection limit is needed to produce meaningful results.

b) An estimate must be made of other compounds or conditions present that could interfere with detecting the compounds being tested for.

c) A decision must be made about the need to split some samples so that confirmatory testing can be done in a laboratory.

d) The environment in which the testing will take place – outdoors or in a truck or trailer must be considered. There may be special weather-related requirements for any piece of equipment such as a need to avoid low temperature or high humidity conditions.

e) The personnel doing the testing must have the proper training to run the testing equipment in question. Training records must be kept.

When field testing is done by others, either by private parties (including volunteers) who are reporting results to DES, or by parties such as contractors working as DES proxies, the same procedure issues apply. The program manager must ensure that these non-DES parties are using appropriate written

procedures. This may include review and approval of the other party's own procedure. Reference to other standard procedures is encouraged.

Field testing procedures must include information on the choice of equipment, calibration of the equipment and calibration records, other QA/QC needed to ensure that DQOs are met, decontamination requirements, personal protective clothing or equipment needed, containers and preservation needed, and any requirements related to transportation to the testing location. Field testing procedures, training records, and other documents described in this section, especially as regards recording of results and calibration records, are subject to the requirements in Chapter 6 of this QMP, "Documents and Records."

The testing procedure to be used must be reviewed and agreed upon before leaving for the monitoring location. This is necessary to avoid confusion in general, but especially to ensure that proper containers and equipment are taken. It is recognized, however, that there may be unknown site conditions or circumstances, such as those associated with emergency response situations, which would preclude staff from being able to follow this strict guidance in all instances. In such situations, best professional judgment and field staff experience would take precedence. After the incident, written documentation of any testing procedures conducted in the field, along with any relevant extenuating circumstances, must be provided.

The program manager must review field testing procedures generated within DES annually, and send the results of that review, with recommendations for improvements or other changes, to the QA Manager, or Assistant QA Manager in the absence of the QA Manager. This review must include checking to be sure that the QA/QC measures in the procedure are sufficient to meet the established DQOs. Where procedures produced by others are used, a review must also be done, but it can be limited to ensuring that the most recent guidance is still being used. The QA Manager, Assistant QA Manager, and QA Team will evaluate the review and assist the program manager to implement the recommended changes.

8.6 FIXED LABORATORY TESTING

In many or most cases, samples will be tested or examined in an office or laboratory remote from the sampling location. As noted above, the decision as to whether field or fixed laboratory testing is appropriate is the responsibility of the program manager. Program managers should be aware of technological advances which allow for more high quality field testing than has been available in the past.

This section applies primarily to analysis conducted by the DES laboratory or its contractors, but is also relevant to other DES units conducting laboratory testing or otherwise examining samples in the office.

Whenever feasible, sampling procedures written by others, such as *Standard Methods for the Examination of Water and Wastewater* or various USEPA guidance documents should be used. In those cases, care must be taken to ensure that the most up-to-date, approved edition is used. Where these procedures are used, all requirements in them must be followed, including those for data validation. Such QA/QC methods as split, blank, and spiked samples, as prescribed in these procedures, are key to ensuring reliable results, especially when testing at very low concentrations that are often significant.

Where testing procedures written by others are not available, the program manager must ensure that a program-specific procedure, which meets the program's data quality needs, is produced and made available to staff. Existing procedures for similar testing should be used as models whenever possible. The program manager prepares, and has responsibility for, the procedure. The QA Manager, Assistant QA Manager, and the QA Team is available to assist with developing the procedure. The QA Manager reviews and approves the procedure.

Because laboratory testing has been standardized to a great extent, DES program managers will often have fewer choices to make than in sampling or field testing efforts. When in doubt, program managers should consult with the Administrator of the DES Laboratory Services Unit or the Laboratory Services Unit QA Manager.

The DES Laboratory is accredited for an extensive list of analyses under the National Environmental Laboratory Accreditation Conference (NELAC) through the New Hampshire Environmental Laboratory Accreditation Program. The lab's list of accredited tests can be viewed at the following web link: http://des.nh.gov/nhelap/accredited/300003-g.pdf? The DES Laboratory index of procedures can be found in the Laboratory Quality Systems Manual, updated annually. Please contact the lab QA manager for the latest revision.

When deciding what procedure to use for any testing effort, the following factors must be considered:

a) It must be known what compounds are being tested for in what medium, and what detection limit is needed to produce meaningful results.
b) An estimate must be made of other compounds or conditions present that could interfere with detecting the compounds being tested for.
c) Staff must have the training needed to run the testing equipment in question. Training records must be kept.

When testing is done by others, either by private parties (including a number of volunteer organizations such as the Volunteer Lakes Assessment Program and the Volunteer Rivers Assessment Program) who are reporting results to DES or by parties such as contractors working as DES proxies, the same procedure issues apply**.** It is the program manager's responsibility to ensure that these other parties are using appropriate written procedures. This may include review and approval of the other party's own procedure. Reference should be made to other standard procedures being used.

Testing procedures must include information on choice of equipment, calibration of the equipment and calibration records, QA/QC measures needed to ensure that the DQOs are met, decontamination requirements, personal protective clothing or equipment needed, containers and preservation needed, any requirements related to transportation to the testing location, and field documentation requirements. Testing procedures, training records and other documents described in this section, especially as regards recordation of results and calibration records, are subject to the requirements in Chapter 6 of this QMP, "Documents and Records."

This section of the QMP also applies to other activities done in the office that cannot be described properly as laboratory testing – some examples would be examination of geological samples or examination of amphibians for deformities. In cases where an item or sample is examined, the observations should be recorded immediately. The purpose of the examination should be included in the record, along with standard items such as date, time, and name of staff person doing the examination. Basically, the same principals apply as for testing, but simplified to meet the situation.

The program manager must review testing procedures generated within DES annually, and the results of that review, with recommendations for improvements or other changes, must be sent to the QA Manager or Assistant QA Manager in the absence of the QA Manager. This review must include checking to be sure that the QA/QC measures in the procedure are sufficient to meet the established DQOs. Where procedures produced by others are used, a review must also be done, but it can be limited to ensuring that the most recent guidance is still being used. The QA Manager, Assistant QA Manager, and the QA Team will evaluate the review and assist the program manager to implement the recommended changes.

8.7 ENVIRONMENTAL CONDITION DESCRIPTIONS AND DATA

Many DES programs do not deal with environmental data in the sense of laboratory test results, of parts-per-million of a particular contaminant. For example, Wetlands Bureau staff gather information about environmental conditions -- they describe conditions at a given location at a point in time: is a location a wetland; has it been filled or dredged; how do conditions now compare to earlier conditions; and who and what is present. Other programs that conduct sampling in the more typical sense will also gather this environmental condition data as an adjunct.

This information is very important to DES, and can be especially important for enforcement purposes. DES staff should refer to Chapter IV of the DES *Compliance Assurance and Response Policy (www.des.nh.gov/legal/carp/carp-ch-4.pdf).*

As with field sampling and testing, the purpose of the site visit or inspection must be understood in advance. Supervisors are responsible for ensuring that the field personnel, when taking measurements, know how to use the measuring tool in question. This can be quite simple in the case of a measuring tape, or equipment-specific training may be needed. If the latter is true, records of the training must be kept. Manufacturer's recommendations regarding use of the equipment must be followed.

For any field visit to inspect a site or to take samples or conduct field testing, the visit must be recorded in a field book or on a form specific to the program. Recommendations regarding field documentation include the following:

a) The date, time, weather conditions (temperature can be estimated), and the identity of persons present must be recorded;

b) The purpose of the visit must be recorded. This note-taking must be completed before leaving the site area. Notes added after leaving the site area should be marked as such;

c) Nothing is to be erased in a field book. When mistakes are made, the mistaken information is to be struck through with a single line so that it can still be read. The change is to be dated and initialed. Also, all unused lines in the field book should be struck through and initialed;

d) Other events or conditions should be noted. Personnel should be liberal in applying this principle. Items that do not appear to matter often do. An example would be: While sampling groundwater at a contaminated site, personnel note that children are riding bicycles across the back lot. This might not be noted, since it has nothing to do with the sampling. However, this is important information to site managers and risk assessors – it is

evidence that children may be at risk, which may not have been obvious. Contacts with people working at the site, the site owner, neighbors, local officials, representatives of utilities or other government agencies, or other interested parties must always be recorded;

e) DES encourages the use of photographs and videotapes to record field conditions. Like the field notes, these visual records are public documents unless they become confidential as confidential business information or for enforcement purposes (See Chapter IV of the DES *Compliance Assurance and Response Policy* - *www.des.nh.gov/legal/carp/carp-ch-4.pdf*). Film photographs should be printed in duplicate. Prints and copies of videotapes or electronic photographs may be sent to members of the public (especially the site owner) or other agencies, but the photographic negative or the original of the videotape or digital photograph must remain with DES unless specifically authorized by the program manager, or in some cases, by the DES Legal Unit, to be released;

f) Prints of photographs and the outside of video tape cassettes should be marked identifying the date the picture was taken, the site or case, and the name of the person who took the pictures. For video tapes, the person taking the pictures should start the shot by introducing him/herself and the location being shot;

g) Where there may be enforcement issues, the sole use of digital photographs is discouraged. Use of this medium may leave DES open to accusations of altering the picture, although some DES staff are currently evaluating the feasibility of utilizing digital signatures for photographs. However, if this is not an option, the DES Legal Unit will accept an affidavit from the employee(s) stating that the pictures were not altered.

h) As noted above, field notes or other field documentation must be considered in the public record. When requested, copies of the field documentation must be provided. The program manager and the DES Legal Unit will make the decision as to whether a particular record is to be treated as confidential;

i) A professional standard must be kept in note taking. Snide, angry or sarcastic notes should never be recorded. Comments on any person's character must be avoided. A strictly factual style should be followed. If necessary, record "He/She/I became agitated…" Any page of any field book may have to be defended in court. The appearance of personal animus can ruin an otherwise tight enforcement case;

j) Handwritten notes taken in the field are not expected to show the best penmanship. However, they should be legible to persons other than the note-taker. If legibility may be an issue, a typed transcript should be prepared and placed in the relevant site/case file. Typed transcripts should show the date of the field visit, the date of the transcription and the name of the person who did the typing;

k) Personnel who are in the field often should keep their field book with them whenever they are on duty and out of the office. Field personnel who "just happened to be passing by" obtain important information. In this case, such observations should be recorded, and reported to authorities as necessary, but personnel should not attempt to make a full inspection without notifying a DES office and having the proper training and equipment to address the situation at hand (*e.g.,* a septic system inspector who happens upon someone dumping hazardous waste should probably observe from a distance and report the situation to the office); and

l) Field books remain in the possession of staff. Copies of the field book pages are placed in site/case files as needed. Program-specific field forms are placed in the site/case file. Photographic and/or video documentation is also placed in the site/case file. See Chapter 6 of this QMP, "Documents and Records."

8.8 REPORTING RESULTS

When reporting the results of a measurement, test, or environmental condition, the object of the report is to clearly communicate the result to a specific audience. The following should be considered when reporting results:

a) Information should be included so that the person receiving the report will know that the data is of appropriate quality. QA/QC information must not obscure the data being reported;

b) Data must not be obscured by technical jargon, therefore when preparing a report the audience must be considered. For reports to the public, greater clarity is needed, and including detailed QA/QC information may not be necessary. When reporting to technical staff, full QA/QC information should be included;

c) Reports must include the name of the sampler/tester and of the reviewer. Dates and sampling/test methods must be included or referenced. Raw data should be included as necessary;

d) To allow for clear communication, tables and graphs are encouraged. Where past results are part of that summary table or graph, the report should include enough information to allow interested people to find that past data. Including the date of the past sampling/testing, the location and parameter being sampled/tested, and the person/unit that did the testing will probably be sufficient to meet this goal;

e) Sampling and test results must be reported to the designated program person. For instance, the DES laboratory will report to the person doing the sampling, unless specifically instructed otherwise. The program manager is responsible for instructing staff to forward results to the proper parties;

f) Where samples are collected on private property, the property owner must receive the results unless enforcement considerations dictate otherwise or the property owner has stated that he/she does not want the data. If a municipality has requested specific data, or entire classes of data, it must receive the results unless enforcement considerations indicate otherwise. In this case, the municipality should be informed, confidentially if necessary, that this information is enforcement-confidential; and

g) Data should be shared with USEPA and other government agencies freely. All DES staff must be guided by the knowledge that, in general, all DES data is public information. DES staff should be open, and in fact pro-active, in sharing our information. Again, this has to be done in a way that is communicative to the audience receiving the information while retaining technical rigor.

CHAPTER 9 ASSESSMENT AND CORRECTIVE ACTION

The process of assessing system performance and correcting deficiencies in an organized manner is fundamental to operating any quality system dedicated to continuous improvement, as the DES Quality system is. DES management is committed to this ongoing process and will provide the necessary resources to maintain an effective quality management system.

The QA Team and DES Senior Leadership Team will develop, approve, and document quality system review procedures designed to determine how effectively department programs and activities are achieving environmental goals and quality objectives. Such review procedures are based on quality objectives as documented in this QMP, QAPPs, SOPs, technical or professional standards, or other requirements set forth prior to work being performed.

The DES Quality Management System review includes annual program reviews/self-assessments carried out in combination with a smaller set of formal internal audits conducted by the QA Team or other qualified staff. The results of the self-assessments and audits feed the annual Quality Assurance System Status Report described in greater detail in Chapter 10. In general, these assessments would take a number of forms within the Department, including:

- Internal program and project reviews/self-assessments;
- Review and validation of data;
- Quality Management System reviews (based on program reviews and audits); and
- Employee performance appraisals;

9.1 INTERNAL PROJECT AND PROGRAM REVIEWS/SELF-ASSESSMENTS

Each program within DES that is involved in the characterization of environmental processes and conditions; environmental monitoring; environmental research and development; the design, construction, and operation of environmental technologies; or laboratory operations on environmental samples must conduct an annual internal reviews/self-assessment to verify that operations continue to comply with the requirements of the DES QMP, any required QAPPs or similar quality documents, SOPs, technical or professional standards, or other requirements set prior to work being performed. It may be convenient to review all multi-year, USEPA-approved project-specific or generic program QAPPs during the annual QA System Program Self-Assessment cycle given that they take place during the slower winter months (from a primary Spring/Summer sampling season perspective). Refer to Section 8.2 - Implementation Overview. These internal reviews may be undertaken at the data (see Section 9.2), project, or the program level. These annual program reviews, the results of which will be used as major input to the annual QMP system reviews and the Quality Assurance System Status Report described in Section 9.3 and Chapter 10, must take place at least once per year.

It is the responsibility of the program manager to plan for and organize internal reviews. For consistency, the review will follow guidance in this QMP (in particular, Chapters 8 and 9) and the "Guidance on Annual Program Self-Assessments/Audits," which is updated annually and placed on the DES Intranet under the "Quality Assurance at DES" folder. The program manager will record the scope, procedures and results of the review in memo form and send that memo to the DES QA Manager, or Assistant QA Manager in the absence of the QA Manager, in a timely fashion. This memo will include a listing of the items reviewed, deficiencies or non-conformances found, reasons for the deficiency or non-conformance, and either a schedule for implementing corrective action, or

documentation of the corrective actions taken (See Section 9.6). The program manager shall ensure that these corrective actions are completed within the agreed time frame. An electronic or hardcopy of the memo should also be kept on file with the originating program.

As described in Section 3.2, the Assistant QA Manager is responsible for overseeing the department's QA System Program Self-Assessment process, including updating guidance documents and forms, tracking program responses, reviewing submitted self-assessment forms, and providing response documents to programs managing environmental data. The procedures followed in conducting the Program Self-Assessment Reviews are documented in an SOP titled, "DES Quality Assurance System Standard Operating Procedure for Review of DES QA System Program Self-Assessments." This SOP was approved by the QA Manager on May 26, 2005, and is located on the DES Intranet under the "Quality Assurance at DES" folder.

Although it may not be feasible due to the small size of many DES programs, staff should not directly review their own activities. Wherever possible, colleagues within a specific program, or in a related program, should make cooperative arrangements to conduct the self-assessments in such a way to avoid the biases associated with evaluating one's own work. The intent of this section is to maintain some separation between the activity/program under review and the assessor, while at the same time, not discouraging ongoing, more informal program evaluation (i.e., continuous improvement).

The QA Manager, Assistant QA Manager, and members of the QA Team are available to assist program managers with assessments and with identifying corrective actions.

9.2 REVIEW AND VALIDATION OF DATA

As a general rule, all data or information must be checked before it is released to the public or used for making decisions. As with any QA/QC effort, this check should not be done by the same person who generated the data, except when it can be demonstrated that an effective review and validation process can be carried out.

Data checks can take place at different levels; these are referred to as "Data Verification," "Data Validation," and "Data Usability Assessment." The definitions for these terms are provided below:

Data Verification is a process of evaluating the completeness, correctness, and conformance or contractual compliance of a data set against the method standard, SOP, or contract requirements documented in the project QAPP. Data verification should be performed internally by the analytical group or fixed laboratory generating the data. Additionally, data can be checked by an entity external to the analytical group or fixed laboratory. Data verification may result in accepted, qualified, or rejected data.

Data Validation is an analyte- and sample-specific process that extends the qualification of data beyond method, procedural, or contractual compliance (i.e., data verification) to determine the analytical quality of a specific data set. Data validation criteria are based on the measurement performance criteria documented in the project QAPP. Data validation must be performed by an organization independent of the group that generates the data. Data validation results in accepted, qualified or rejected data.

Data Usability Assessment is the process of evaluating validated data to determine if it can be used for the purpose of the project, (i.e., to answer the environmental question or to make the environmental decisions that must be made). Data usability includes the following sequence of evaluations:

i. *Individual data sets are evaluated to identify the measurement performance/usability issues/problems affecting the ultimate achievement of project quality objectives.*
ii. *An overall evaluation of all data generated for the project is performed.*
iii. *The project-specific measurement performance criteria and data validation criteria documented in the QAPP are evaluated to determine if they were appropriate for meeting project quality objectives.*

DES expects that in most cases, reviews that can be classified as "Data Usability Assessments" will be sufficient. In some cases however, more formal data verification and validation may be necessary. These more rigorous reviews are more desirable when:

a) A funding agency requires it;

b) There are serious public health and/or environmental impacts;

c) A matter is under litigation, enforcement or a court-ordered schedule, and therefore may be highly scrutinized;

d) A program is being implemented for the first time; or

e) The program has a research aspect.

When the program manager finds that formal data verification and/or validation is necessary, relevant USEPA guidance should be followed.

For the more ordinary forms of data review, at a minimum supervisors should review the information. This is the most basic level of review, and is intended to cover the simplest issues.

This review should cover:

a) Checking consistency and range issues. For instance, a pH of 0.5 in a fresh water sample should be flagged at this point. Also, the result in question should be checked for consistency with past results at this location or, as appropriate, with similar locations or the calibration/operation of the equipment.

b) Checking the completeness and appropriateness of the sampling and testing. Were the right locations/samples tested for the right parameters?

c) Checking that correct methods were used.

d) Checking for transcription errors.

e) Checking that the work was done in accordance with the plan, or if changes were necessary, that the changes were adequately documented.

If there is any doubt as to the validity of a certain data point, the first step is to re-sample and/or re-test.

Beyond issues that can be resolved by re-sampling, many factors can cause a data point or set to be invalid. The art and science of error analysis cannot be fully addressed in a document of this size, but if there are issues with a data point or a data set, the program manager should work with the QA Manager, Assistant QA Manager and QA Team and with his/her own staff to resolve the issue. This is a primary function of the QA Manager and Team. Blame and finger-pointing are to be avoided. The goals are to determine how, or indeed if, this particular data is incorrect; to obtain correct data; to record the decision, and ultimately, to ensure that the issue does not recur.

9.3 QUALITY MANAGEMENT SYSTEM REVIEWS

On January 31st of each year, the DES QA Manager, Assistant QA Manager, and QA Team will coordinate an annual review of the DES Quality Management System to evaluate its continuing suitability and effectiveness, and to introduce any necessary changes or improvements at the system and program operational levels. This review will be comprised of the results of the internal program self-assessments (as described in Sections 9.1 and 9.2) and formal audits conducted by the QA Team and other qualified staff.

In addition to the program reviews/self-assessments, DES will carry out a program of formal audits of a sampling of DES programs to assess conformance to each element of the quality management system and to individual QAPPs (See Section 8.2), SOPs, Department rules, or other Department policies or requirements. The number and frequency of these audits will be determined and documented by the QA Manager, Assistant QA Manager and QA Team. The QA Team and/or other qualified individuals who are independent of the area being audited will conduct the audits. The audits are done in a systematic manner, using objective evidence to make findings regarding non-conformance to requirements and the need for any corrective action. For consistency, the audits will follow guidance in this QMP (Chapters 8 and 9) and will be conducted using the most updated version of an approved DES quality management system audit checklist. An audit checklist is included in the Implementation Guidance on the DES Intranet under the "Quality Assurance at DES" folder. After the audit, program managers will receive an audit report, outlining non-conformances, corrective actions needed, and recommendations intended to provide guidance for process improvements. Proposed corrective actions are evaluated and tracked, and the effective implementation of corrective actions is verified before the audit is closed.

Based upon the results of program reviews/self-assessments and any formal audits conducted by the QA Team, the QA Manager, Assistant QA Manager, and QA Team will prepare a Quality Assurance System Status Report for the DES Senior Leadership Team covering the activities of the previous year. Detailed information on the extent of the quality management system review and the contents of the Quality Assurance System Status Report is presented in Chapter 10.

The DES QA Manager, with the help of the Assistant QA Manager, will provide a briefing to the DES Senior Leadership Team and identify any areas requiring improvement. The Commissioner and Assistant Commissioner have final review and approval authority for the report. The report will be maintained on file with the QA Manager, placed on the DES Intranet under the "Quality Assurance at DES" folder, and will be available to USEPA upon request. The review shall take account of reports from managerial and supervisory personnel, the outcome of recent internal reviews, assessments by external bodies, any change in the volume and type of work undertaken, feedback from the public, corrective actions, and other relevant factors. Each DES Division may have a procedure for review at the Division level (in addition to the required review by the DES QA Manager or Assistant QA Manager) and shall maintain records of review findings and actions.

9.4 EMPLOYEE PERFORMANCE APPRAISALS

Employee performance appraisals are performed following guidance provided by the New Hampshire Code of Administrative Rules of the Division of Personnel, Chapters Per 100 through 1500 and the DES Human Resources Unit of the Office of the Commissioner. The results of these 6-month probationary and annual performance appraisals are documented on Performance Summary forms and placed in the personnel files within the Human Resources Unit (Chapter 4).

9.5 DEFICIENCIES AND NON-CONFORMANCES

Significant deficiencies and non-conformances to QAPPs, SOPs, or Department requirements observed outside of the self-assessment or formal audit processes are reported by staff to the project or program manager, as appropriate. These managers shall ensure that the deficiency or non-conformance is recorded, and shall forward written communications to the appropriate program managerial and project/program-level quality assurance staff.

9.6 CORRECTIVE ACTIONS

Each DES program shall implement procedures to be followed in determining when departures from documented policies, procedures, and quality control have occurred, and to correct the problems that led to the departure. Non-conformances and corrective actions may be identified through program reviews/self-assessment or formal audits (See 9.1). At the minimum, programs must document procedures regarding:

a. The individual(s) responsible for assessing each quality assurance/control procedure;
b. How staff should treat data or reports affected by unacceptable quality control;
c. Within a program, who has authority to suspend or stop work upon detection and identification of an immediate adverse condition affecting quality or health and safety;
d. How corrective actions are to be documented; and
e. Procedures for program review and implementation of corrective action documents.

When deficiencies or non-conformances have been identified, program managers determine and document the following:

a. The nature and scope of the problem;
b. Where possible, the root cause(s) of the problem;
c. The programmatic impact;
d. Required corrective action(s);
e. The individual(s) responsible for initiating and/or recommending corrective actions;
f. Action(s) needed to prevent recurrence;
g. The time frame for corrective actions to be implemented/completed; and
h. The method of assessing and verifying the effectiveness of the corrective action.

The corrective actions should be taken as quickly as possible, but all corrective actions shall be recorded. The program manager shall ensure that these actions are completed within the agreed time frame.

CHAPTER 10 CONTINUOUS IMPROVEMENT

The final part of the quality management cycle is assuring that the actions taken to assess and correct deficiencies in the system are continuously fed back in to the planning process to change and improve the system and its outputs. Continuous process improvement is a core practice at DES and the regular annual assessment process outlined below represents the minimum necessary to allow such continuous improvement to occur.

As noted previously (See Chapters 8 and 9), the QA Manager and Assistant QA Manager, in consultation with the QA Team, will evaluate the results of the annual reviews/self-assessments and formal audits of each program's quality system, and especially the causes for deficiencies and corrective actions taken. As described in Chapter 9, it will be necessary to phase in any quality system review procedures by initially focusing its efforts on a limited number (to be decided and documented at a later date) of environmental programs and activities.

With assistance from the QA Team, the QA Manager and Assistant QA Manager will then prepare an Annual Quality Assurance System Status Report for the DES Senior Leadership Team. The process used for developing the annual QA System Status Report is documented in an SOP, the most updated version of which is located on the DES Intranet site under the "Quality Assurance at DES" folder. This annual Quality Assurance System Status Report forms the main vehicle for communicating issues to DES management. Overall, roles and responsibilities for continuous quality improvement break down as follows:

a) Program staff report problems/issues to their supervisors, who report to the program managers. All relevant issues must be addressed. Problems with more immediate solutions should be resolved in an appropriate and timely fashion. All problems and corrective actions must be documented, and the process reviewed at the time of the annual internal review;

b) Program managers review and assess their programs annually, and report, in writing, to the QA Manager and Assistant QA Manager. The causes of the noted problems and deficiencies must be identified and corrective actions either recommended or, if they have occurred already, documented;

c) The QA Team and other qualified staff conduct formal program audits on a sampling of DES programs to assess the functioning of the DES quality system;

d) The QA Manager and/or Assistant QA Manager summarizes the reports from the program managers, as well as the results of the program audits, and reports, to the DES Senior Leadership Team, the department-wide findings through the written Quality Assurance System Status Report. This report must include recommendations to address outstanding deficiencies. Issues should be prioritized for the Senior Leadership Team's consideration;

e) The DES Senior Leadership Team reviews the annual Quality Assurance System Status Report and authorizes changes as they find necessary; and

f) The QA Manager and/or Assistant QA Manager track the progress of the program managers in implementing the changes authorized by the Senior Leadership Team, as well as providing assistance where necessary. Changes made are documented in the next year's Quality Assurance System Status Report.

It is expected that USEPA, as part of their responsibility to conduct periodic evaluations of the programs it funds, will review the quality systems for many DES programs. The results of USEPA's reviews will be communicated to the DES QA Manager, and ultimately, to the affected programs. The QA Manager or Assistant QA Manager will communicate the results to the affected program managers, who will implement appropriate recommended changes with the QA Manager's or Assistant QA Manager's assistance. These changes must be reported in the program manager's annual reports referenced in item 2, above.

Program managers and staff must maintain communication with the suppliers and users of their data, both to ensure maximum usability and to identify problems as quickly as possible. Records should be kept of these communications.

The overall goal at all steps of this continuous improvement process is to anticipate and prevent problems from arising wherever possible, and otherwise identify and correct them as quickly as possible.

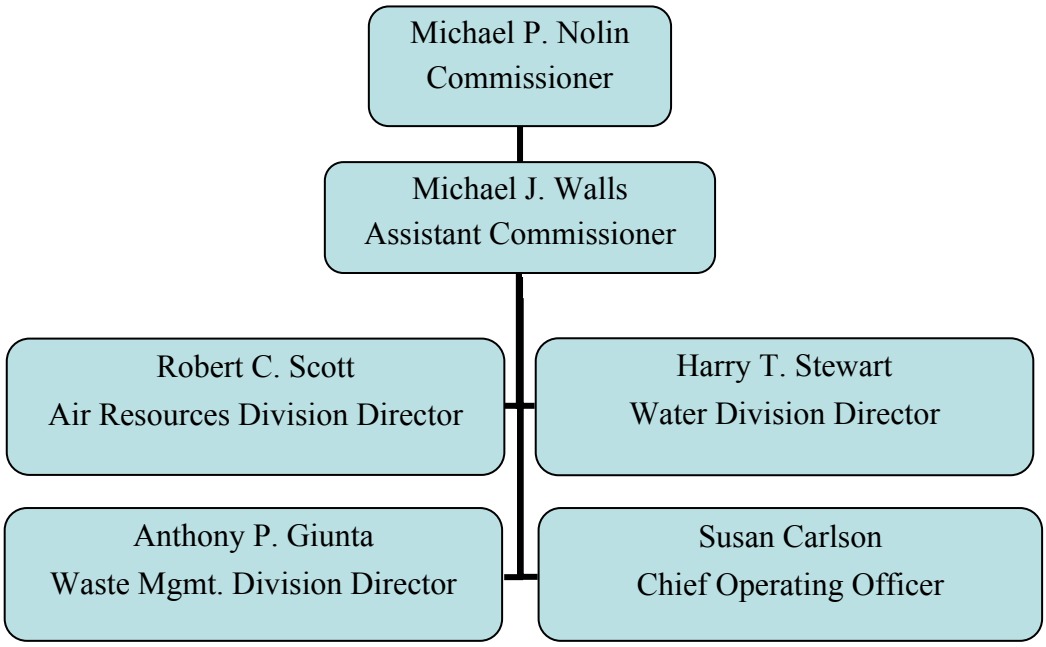
The QMP will be reviewed annually to ensure that all information contained within it is relevant and up-to-date. Any necessary QMP revisions will be made, and the revised document will be submitted to USEPA. Five years from the date of approval of this QMP, the QA Manager, Assistant QA Manager, and QA Team will undertake a complete review of the document and submit a revised QMP to USEPA for approval.

Each environmental program at DES will have a copy of the approved QMP on file. The approved QMP will also be posted on the DES Intranet under the "Quality Assurance at DES" folder for ease of access by program managers and others. Program-specific quality documents will also be posted on the DES intranet for staff use. Implementation of the quality assurance system will be incorporated into the appropriate Performance Partnership Agreement and Comprehensive Action and Assessment Planning documents for each environmental program.

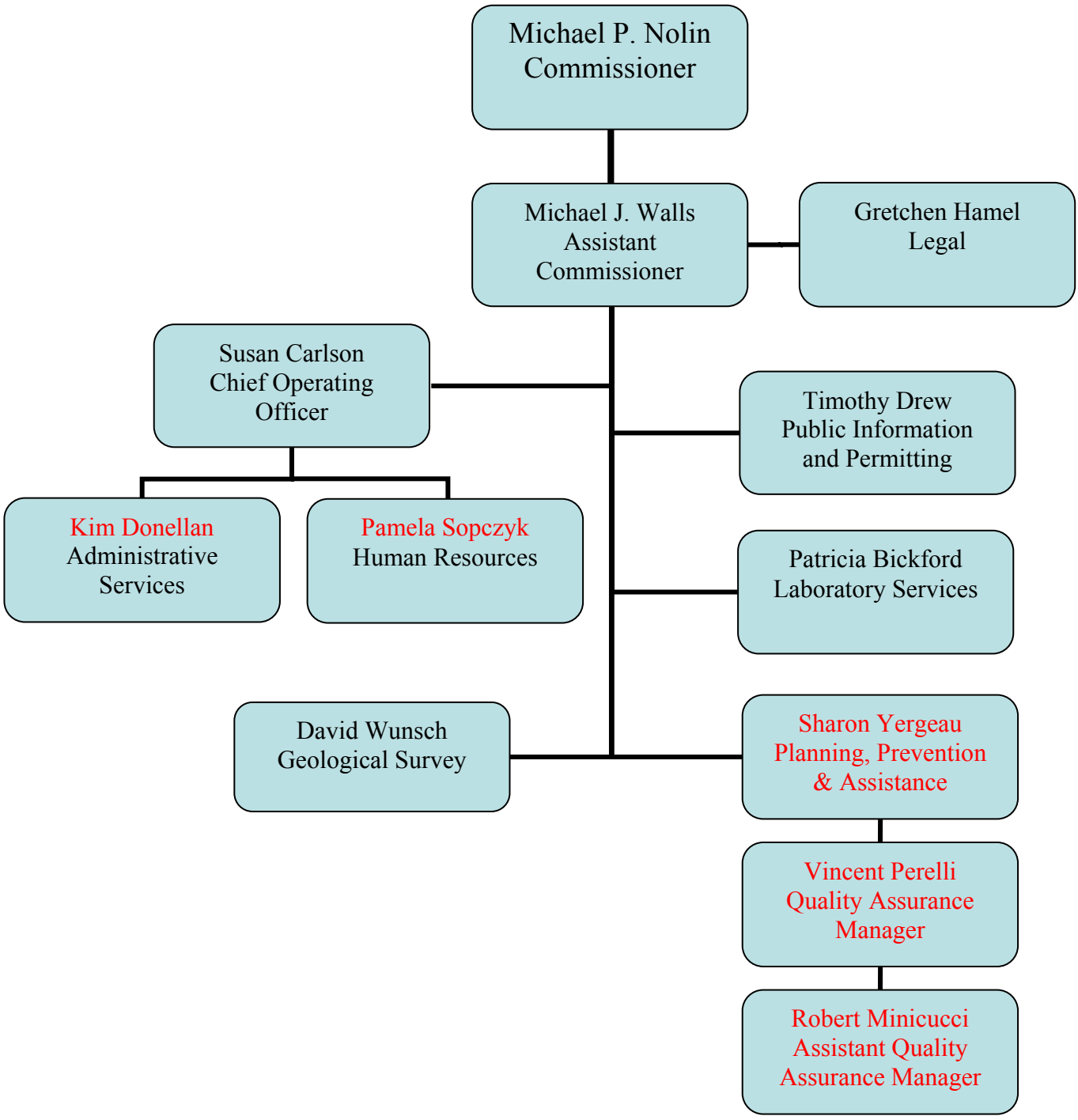
APPENDICES

APPENDIX A
DES ORGANIZATIONAL CHARTS
(As of 06/30/06)

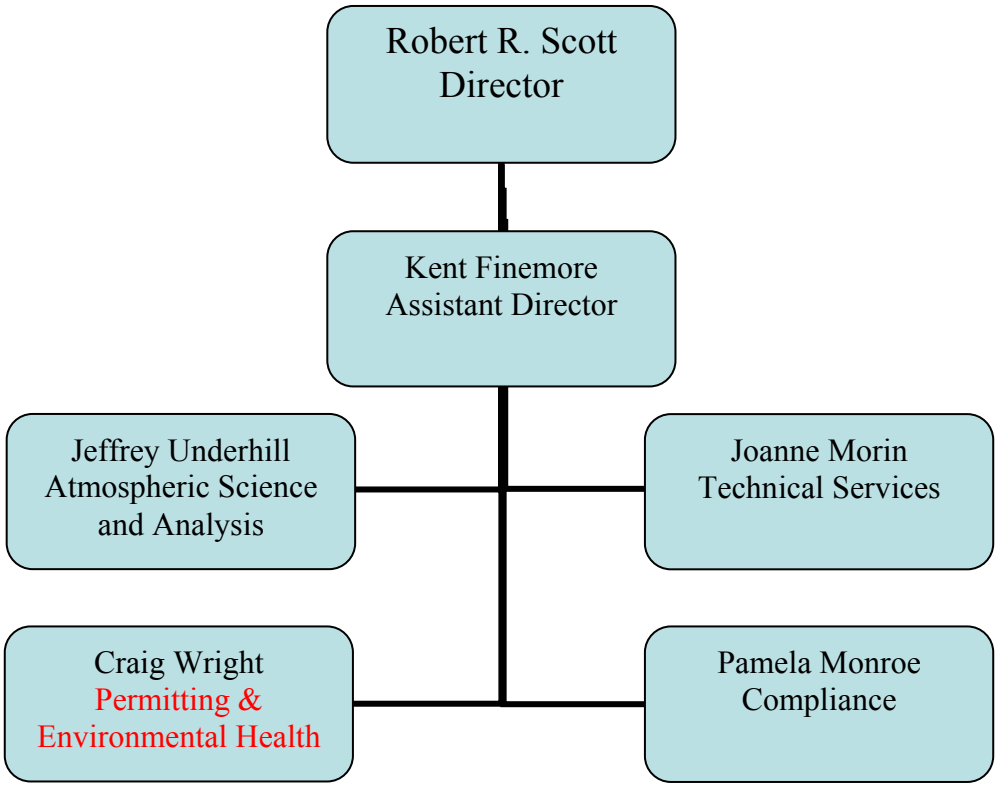
N.H. Department of Environmental Services



N.H. Department of Environmental Services
Office of the Commissioner

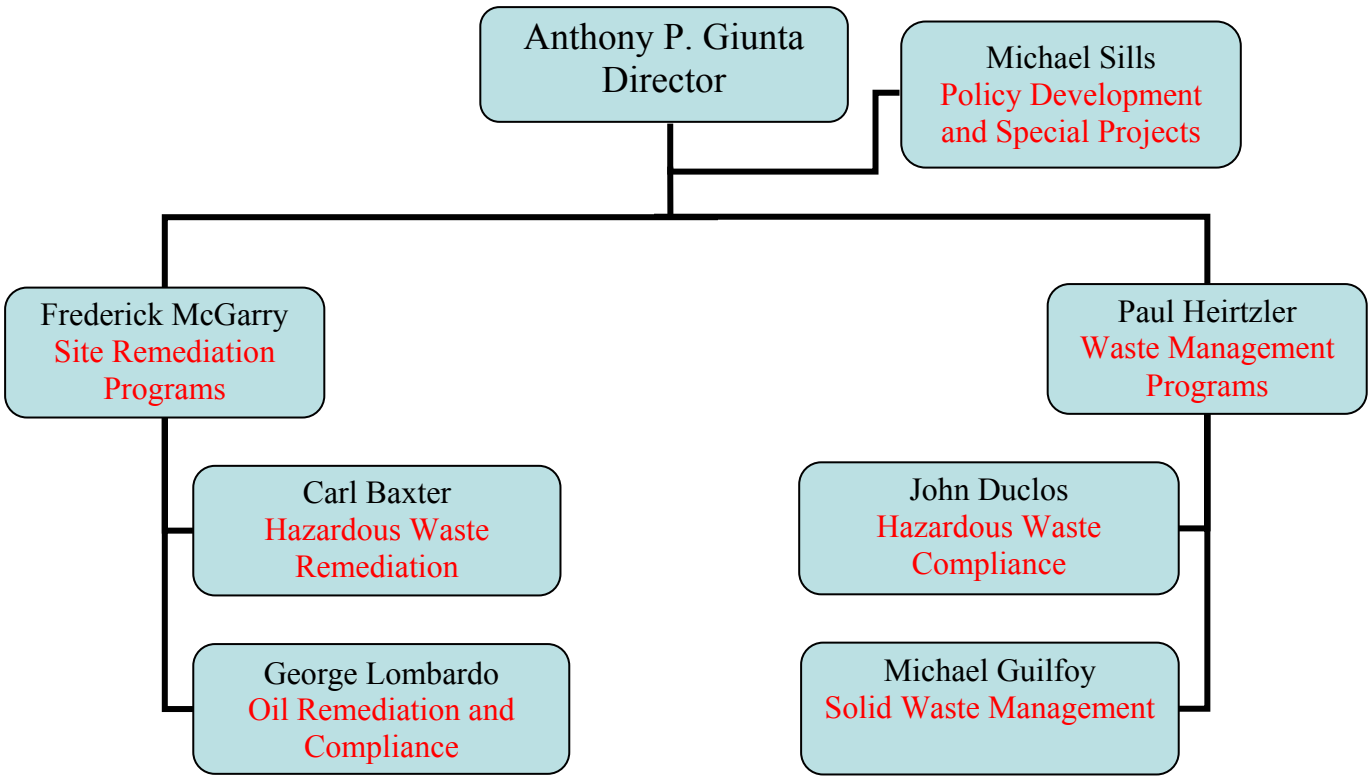


N.H. Department of Environmental Services
Air Resources Division

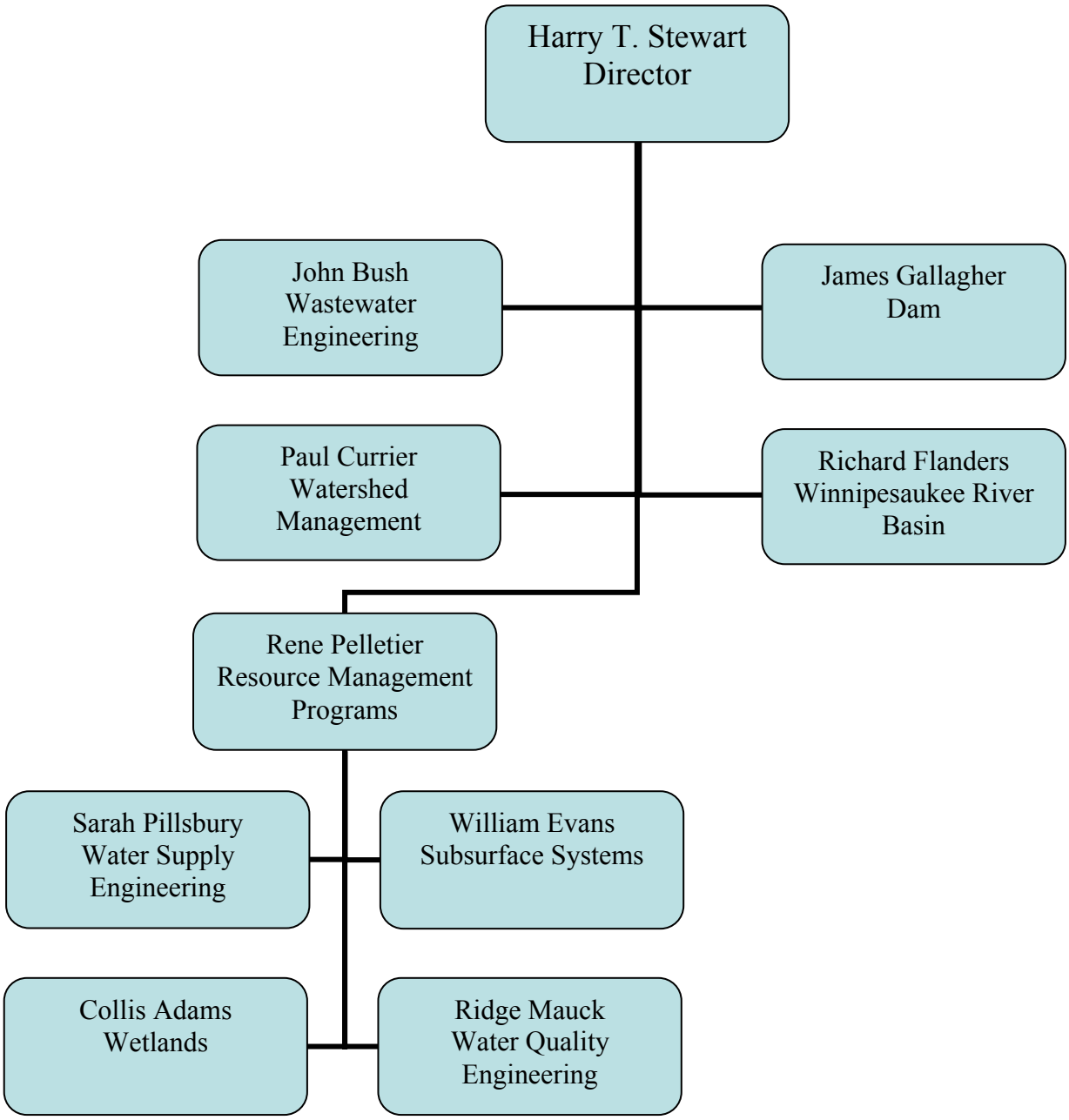


N.H. Department of Environmental Services
Waste Management Division

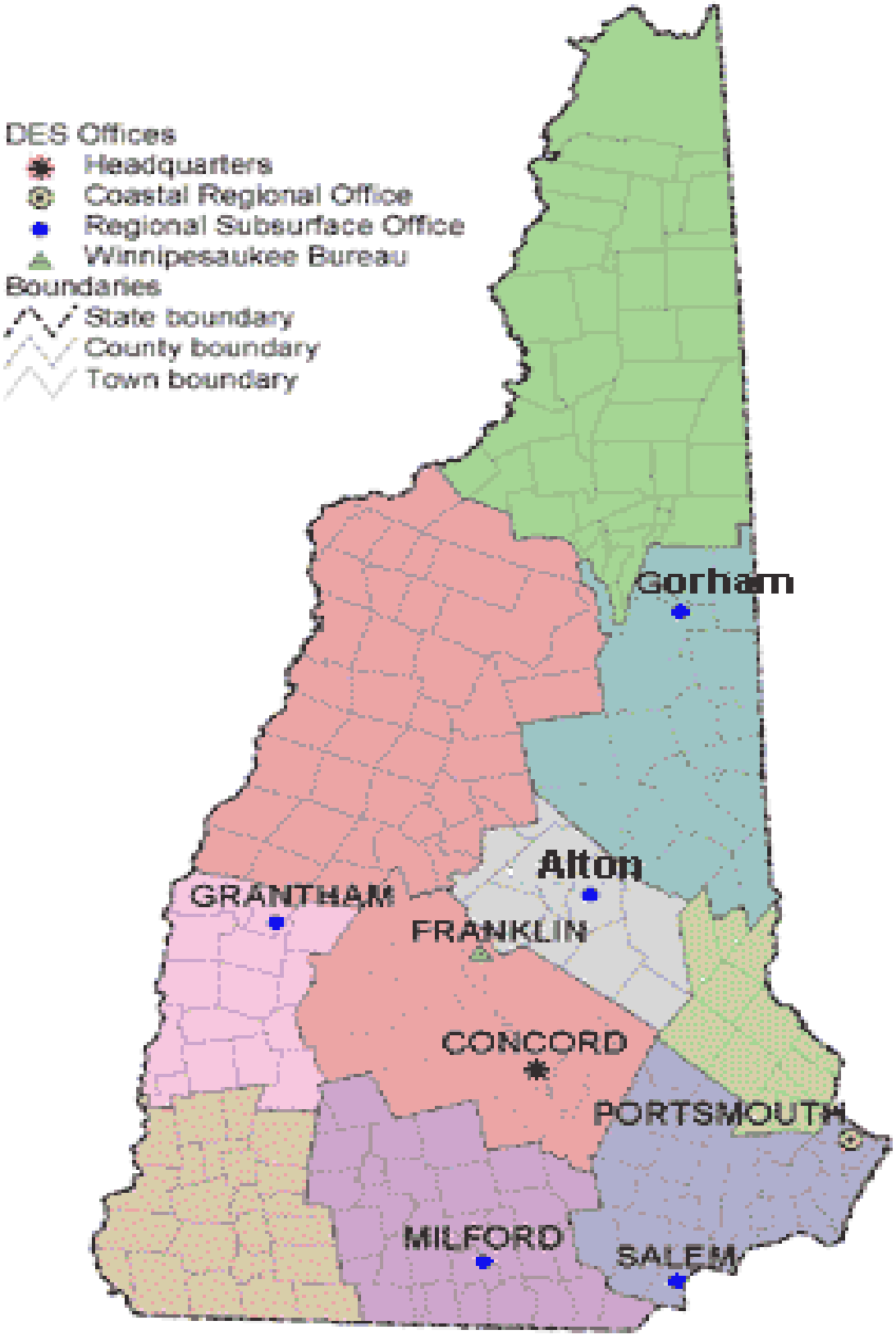
Note: The Waste Management Division is still in a state of flux due to an on-going re-organization effort.



N.H. Department of Environmental Services
Water Division



APPENDIX B -- DES SATELLITE OFFICES MAP



APPENDIX C -- DES QUALITY ASSURANCE TEAM

Main Contact Information (unless otherwise noted):

New Hampshire Department of Environmental Services
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095
Phone: (603) 271-3503
Fax: (603) 271-2867
E-mail: (first initial)(full last name)@des.state.nh.us
Web: www.des.nh.gov/qa

Franklin Wastewater Treatment Facility (WWTF)
528 River Street, P.O. Box 68
Franklin, NH 03235
Phone: (603) 934-2809
Fax: (603) 934-4831

Bureau/Program Represented	Title	Staff Currently Holding Position
Department-wide/Office of the Commissioner	Chief of Planning and Policy (DES QA Manager)	Vincent Perelli (603) 271-8989
Laboratory Services Unit	Laboratory QC Manager	Rachel Rainey (603) 271-2994
Water Division – Water Supply Engineering Bureau	Environmental Laboratory Accreditation Program Mgr.	William Hall – Resigned (6/06) (603) 271-2998
Water Division – Watershed Management Bureau	Nonpoint Source Specialist	Jillian Jones (603) 271-8475
Water Division – Wastewater Engineering Bureau	Environmental Inspector Program QA Officer	Thomas Croteau (603) 271-2985
Water Division – Winnipesaukee River Basin Bureau	Laboratory Director Franklin WWTF	Vicki Whittemore (603) 934-2809
Air Resources Division – Technical Services Bureau	Air Monitoring Quality Assurance Supervisor	Jim Poisson/Kent Finemore (603) 271-1384/1382
Waste Management Division – Site Remediation Programs	Special Projects Manager (Assistant DES QA Manager) Quality Assurance Coordinator	Robert Minicucci (603) 271-2941 Sharon Perkins (603) 271-6805
Waste Management Division – Waste Management Programs	Quality Assurance Coordinator	Wendy Bonner (603) 271-6425

Date: June 30, 2006 **Revision:** 6